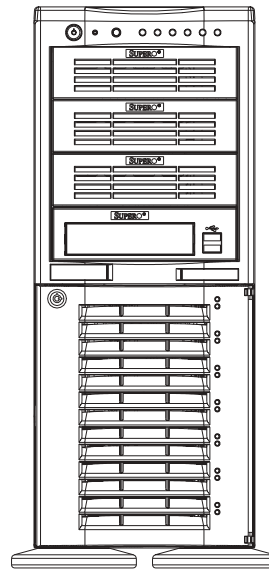
SUPERMICRO®

SUPERSERVER 7043M-8
SUPERSERVER 7043M-6



USER'S MANUAL

1.0a

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Preface

About This Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the SuperServer 7043M-8/7043M-6. Installation and maintainance should be performed by experienced technicians only.

The SuperServer 7043M-8/7043M-6 is a high-end, dual processor 4U tower/rackmountable server based on the SC742S-450 4U rackmount server chassis and the X5DMS-8GM/X5DMS-6GM, a dual processor motherboard that supports single or dual Intel Xeon® processors up to 3.20 GHz at a Front Side (System) Bus speed of 533/400 MHz and up to 12 GB DDR266 (PC2100) SDRAM main memory.

Manual Organization

Chapter 1: Introduction

The first chapter provides a checklist of the main components included with the server system and describes the main features of the SUPER X5DMS-8GM/X5DMS-6GM mainboard and the SC742S-450 chassis, which comprise the SuperServer 7043M-8/7043M-6.

Chapter 2: Server Installation

This chapter describes the steps necessary to install the SuperServer 7043M-8/7043M-6 into a rack and check out the server configuration prior to powering up the system. If your server was ordered without processor and memory components, this chapter will refer you to the appropriate sections of the manual for their installation.

Chapter 3: System Interface

Refer here for details on the system interface, which includes the functions and information provided by the control panel on the chassis as well as other LEDs located throughout the system.

Chapter 4: System Safety

You should thoroughly familiarize yourself with this chapter for a general overview of safety precautions that should be followed when installing and servicing the SuperServer 7043M-8/7043M-6.

Chapter 5: Advanced Motherboard Setup

Chapter 5 provides detailed information on the X5DMS-8GM/X5DMS-6GM motherboard, including the locations and functions of connections, headers and jumpers. Refer to this chapter when adding or removing processors or main memory and when reconfiguring the motherboard.

Chapter 6: Advanced Chassis Setup

Refer to Chapter 6 for detailed information on the SC742S-450 server chassis. You should follow the procedures given in this chapter when installing, removing or reconfiguring SCSI or peripheral drives and when replacing system power supply units and cooling fans.

Chapter 7: BIOS

The BIOS chapter includes an introduction to BIOS and provides detailed information on running the CMOS Setup Utility.

Appendix A: BIOS POST Messages

Appendix B: BIOS POST Codes

Appendix C: Supero Doctor III

Appendix D: System Specifications

Notes

Table of Contents

Preface

About This Manual iii
Manual Organization iii

Chapter 1: Introduction

1-1 Overview 1-1
1-2 Motherboard Features 1-2
1-3 Server Chassis Features 1-4
1-4 Contacting Supermicro 1-6

Chapter 2: Server Installation

2-1 Overview 2-1
2-2 Unpacking the 7043M-8/7043M-6 2-1
2-3 Preparing for Setup 2-1
2-4 Installing the 7043M-8/7043M-6 into a Rack 2-3
2-5 Checking the Motherboard Setup 2-7
2-6 Checking the Drive Bay Setup 2-9

Chapter 3: System Interface

3-1 Overview 3-1
3-2 Control Panel Buttons 3-1
Power 3-1
NMI 3-1
Reset 3-2
3-3 Control Panel LEDs 3-2
Power 3-2
HDD 3-2
NIC1 3-2
NIC2 3-2
Overheat 3-3
Power Fail 3-3
3-4 SCSI Drive Carrier LEDs 3-3
3-5 LAN (Ethernet) Port LEDs 3-4

Chapter 4: System Safety

4-1 Electrical Safety Precautions 4-1
4-2 General Safety Precautions 4-2
4-3 ESD Safety Precautions 4-3
4-4 Operating Precautions 4-4

Chapter 5: Advanced Motherboard Setup

5-1 Handling the X5DMS-8GM/X5DMS-6GM Motherboard 5-1
5-2 PGA Processor and Heatsink Installation 5-2
5-3 Connecting Cables 5-5
Connecting Data Cables 5-5
Connecting Power Cables 5-5
Connecting the Control Panel 5-6
5-4 I/O Ports 5-7
5-5 Installing Memory 5-7
5-6 Adding PCI Cards 5-9
5-7 Motherboard Details 5-10
Super X5DMS-8GM/X5DMS-6GM Layout 5-10
X5DMS-8GM/X5DMS-6GM Quick Reference 5-11
5-8 Connector Definitions 5-12
ATX Power Connector 5-12
Processor Power Connector 5-12
NMI Button 5-12
Power LED 5-12
HDD LED 5-13
NIC1 LED 5-13
NIC2 LED 5-13
Overheat LED (OH) 5-13
Power Fail LED 5-13
Reset Button 5-14
Power Button 5-14
Chassis Intrusion 5-14
Universal Serial Bus (USB0/1) 5-14
Extra Universal Serial Bus Headers 5-15
Serial Ports 5-15
LAN (Ethernet) Ports 5-15
ATX PS/2 Keyboard and Mouse Ports 5-15
Fan Headers 5-16
Power LED/Speaker 5-16

Third Power Supply Fail Header 5-16
Keylock 5-17
Wake-On-LAN 5-17
Wake-On-Ring 5-17
5-9 Jumper Settings 5-18
Explanation of Jumpers 5-18
CMOS Clear 5-18
Main Power Override 5-18
Mb LAN Enable/Disable 5-19
Gb LAN Enable/Disable 5-19
VGA Enable/Disable 5-19
Third Power Supply Alarm Enable/Disable 5-19
SCSI Enable/Disable 5-20
SCSI Termination Enable/Disable 5-20
Watch Dog Enable/Disable 5-20
System Bus Speed 5-21
5-10 Onboard Indicators 5-21
LAN (Ethernet) LEDs 5-21
5-11 Parallel Port, Floppy/Hard Drive and SCSI Connections 5-22
Parallel Port Connector 5-22
Floppy Connector 5-23
IDE Connectors 5-23
Ultra320/160 SCSI Connectors 5-24
5-12 Installing Software Drivers 5-25

Chapter 6: Advanced Chassis Setup

6-1 Static-Sensitive Devices 6-1
6-2 Front Control Panel 6-3
6-3 System Fans 6-4
Fan Failure 6-4
Replacing System Fans 6-4
6-4 Drive Bay Installation 6-5
SCSI Drives 6-5
Installing Components in the 5 1/4" Drive Bays 6-8
6-5 Power Supply 6-9
Power Supply Failure 6-9
Replacing the Power Supply 6-9

Chapter 7: BIOS

7-1 Introduction 7-1
7-2 Running Setup 7-2
7-3 Main BIOS Setup 7-2
7-4 Advanced Setup 7-6
7-5 Security 7-15
7-6 Power 7-17
7-7 Boot 7-19
7-8 PIR 7-20
7-9 Exit 7-22

Appendices:

Appendix A: BIOS POST Messages A-1
Appendix B: BIOS POST Codes B-1
Appendix C: Supero Doctor III C-1
Appendix D: System Specifications D-1

Notes

Chapter 1

Introduction

1-1 Overview

The Supermicro SuperServer 7043M-8/7043M-6 is a high-end dual processor server that can be utilized either in a tower or in a rackmount configuration. The SuperServer 7043M-8/7043M-6 is comprised of two main subsystems: the SC742S-450 high-end server chassis and the X5DMS-8GM/X5DMS-6GM dual Xeon processor mainboard. Please refer to our web site for information on operating systems that have been certified for use with the SuperServer 7043M-8/7043M-6.

In addition to the mainboard and chassis, various hardware components have been included with the SuperServer 7043M-8/7043M-6, as listed below:

- Up to two (2) 604-pin Intel Xeon processors (optional)
- Two (2) CPU heatsinks (FAN-042-CF)
- Two (2) heatsink retention clip assemblies (SKT-095-604E)
- Up to 12 GB ECC registered DDR266 SDRAM main memory (optional)
- One (1) 3.5" floppy drive
- Three (3) 5.25" drive bays
- One (1) ribbon cable for IDE CD-ROM
- One (1) ATA100 ribbon cable for IDE hard drives
- One (1) USB cable for front side access
- One (1) single channel SCA SCSI backplane
- Seven (7) SCA **1-inch high** SCSI drive carriers

- SCSI Accessories
  One (1) 68-pin Ultra320/160 SCSI cable (for SCA SCSI backplane)
  One (1) SCSI manual

You should also have received a User's Manual and Supermicro CD-ROM, which contains several drivers and utilities.

1-2 Motherboard Features

At the heart of the SuperServer 7043M-8/7043M-6 lies the X5DMS-8GM/X5DMS-6GM, a dual processor motherboard based on Intel's E7501 chipset and designed to provide maximum performance. Below are the main features of the X5DMS-8GM/X5DMS-6GM. See Figure 1-1 for a block diagram of the E7501 chipset.

Processors

The X5DMS-8GM/X5DMS-6GM supports single or dual 604-pin Intel Xeon processors of up to 3.20 GHz at a 533/400 MHz FSB (front side bus). Please refer to the motherboard description pages on our web site for a complete listing of supported processors (http://www.supermicro.com/Product_page/product-m.htm).

Memory

The X5DMS-8GM/X5DMS-6GM has six 184-pin DIMM slots that can support up to 12 GB of registered ECC DDR266 (PC2100) SDRAM. Module sizes of 128MB, 256MB, 512MB 1GB and 2GB may be used to populate the DIMM slots. (The X5DMS-8GM/X5DMS-6GM was designed to support 2GB DIMM modules in each slot, however 2GB memory modules have not yet been validated.)

Onboard SCSI

7043M-8: Onboard SCSI is provided with an Adaptec AIC-7902 SCSI chip, which supports Ultra320 SCSI at a throughput of 320 MB/sec. The X5DMS-8GM provides two Ultra320 SCSI ports.

7043M-6: Onboard SCSI is provided with an Adaptec AIC-7899W SCSI chip, which supports Ultra160 SCSI at a throughput of 160 MB/sec . The X5DMS-6GM provides two Ultra160 SCSI ports.
Note: The operating system you use must have RAID support to enable the hot-swap capability of the SCSI drives.

PCI Expansion Slots

The X5DMS-8GM/X5DMS-6GM has a total of six PCI expansion slots consisting of one 64-bit 133 MHz slot, two 64-bit 66 MHz slots and three 32-bit 33 MHz slots. See Chapter 7 for details.

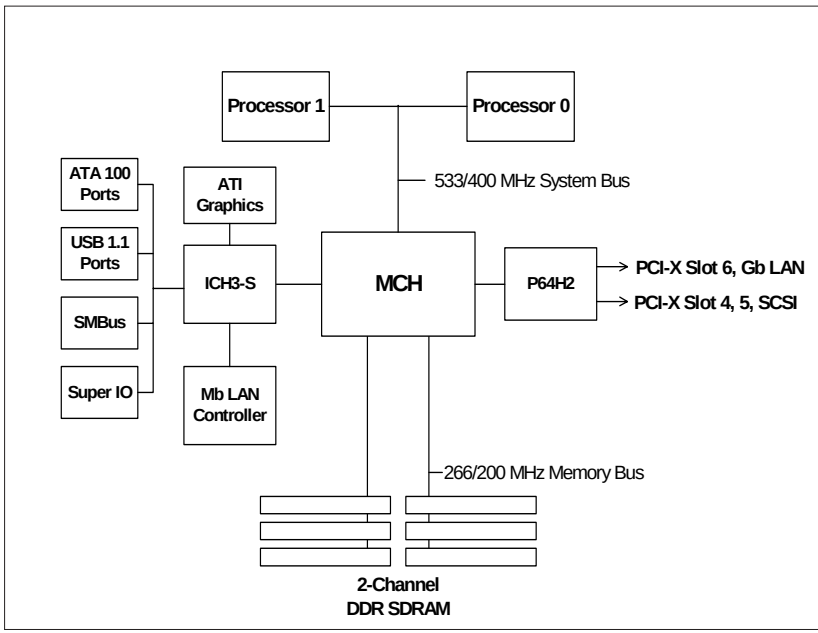
Onboard Controllers/Ports

One floppy drive controller and two onboard ATA/100 controllers are provided to support up to four hard drives or ATAPI devices. The color-coded I/O ports include two COM ports, a parallel port, two USB ports, PS/2 mouse and keyboard ports, one G-bit Ethernet port and one M-bit Ethernet port. Two front side USB ports are also included on the front of the chassis.

Other Features

Other onboard features that promote system health include onboard voltage monitors, a chassis intrusion header, auto-switching voltage regulators, chassis and CPU overheat sensors, virus protection and BIOS rescue.

Figure 1-1. E7501 Chipset: System Block Diagram



1-3 Server Chassis Features

The SuperServer 7043M-8/7043M-6 is a high-end, scaleable server platform designed with today's most state-of-the-art features. The following is a general outline of the main features of the SC742S-450 server chassis.

System Power

The 7043M-8/7043M-6 features a single 450W power supply with a redundant cooling fan and a thermal control feature. This power unit is equipped with two fans. One runs continuously while the other activates if the primary fan fails or if the temperature becomes too high, which also activates an alarm and illuminates the power fail LED. An alarm reset button is located on the back of the power supply to deactivate the power fail alarm.

SCSI Subsystem

The SCSI subsystem supports up to seven 80-pin SCA Ultra320 (7043M-8) or Ultra160 SCSI (7043M-6) hard drives. (Any standard 1" drives are supported. SCA = Single Connection Attachment.) These can be configured as seven drives on a single channel or divided on two channels. The SCSI drives are connected to two SAF-TE compliant SCA backplanes that provide power, bus termination and configuration settings. The SCSI drives are hot-swap units. A RAID controller card can be used with the SCA backplanes to provide data security.
Note: The operating system you use must have RAID support to enable the hotswap capability of the SCSI drives.

Front Control Panel

The SuperServer 7043M-8/7043M-6's control panel provides you with system monitoring and control. LEDs indicate system power, HDD activity, network activity, overheat condition and power supply failure. A main power button, a system reset button and an NMI button are also included.

I/O Backplane

The SC742 is an ATX form factor chassis that can be used as a tower or mounted as a 4U rackmount server. The I/O backplane provides seven motherboard expansion slots, one COM ports, a parallel port, a video (monitor) port, two USB ports, PS/2 mouse and keyboard ports, one G-bit and one M-bit Ethernet ports.

Cooling System

The SC742S-450 chassis has an innovative cooling design that includes two 9-cm hot-plug redundant system cooling fans and one heavy duty 12-cm exhaust fan. The power supply includes both a primary and a secondary fan. All fans operate continuously, except for the secondary power supply fan, which activates only when the primary fails or the temperature becomes too high.

1-4 Contacting Supermicro

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Web Site: www.supermicro.com.tw
Technical Support:
Email: support@supermicro.com.tw
Tel: 886-2-8228-1366, ext.132 or 139

Chapter 2

Server Installation

2-1 Overview

This chapter provides a quick setup checklist to get your SuperServer 7043M-8/7043M-6 up and running. Following these steps in the order given should enable you to have the system operational within a minimum amount of time. This quick setup assumes that your SuperServer 7043M-8/7043M-6 system has come to you with the processors and memory preinstalled. If your system is not already fully integrated with a motherboard, processors, system memory etc., please turn to the chapter or section noted in each step for details on installing specific components. The 7043M-8/7043M-6 may be employed either as a tower or mounted in a rack as a 4U rackmount chassis. If using it as a server, please read Server Precautions in the next section and then skip ahead to Section 2-5.

2-2 Unpacking the SuperServer 7043M-8/7043M-6

You should inspect the box the SuperServer 7043M-8/7043M-6 was shipped in and note if it was damaged in any way. If the server itself shows damage you should file a damage claim with the carrier who delivered it.

Decide on a suitable location for the SuperServer 7043M-8/7043M-6. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated. You will also need it placed near a grounded power outlet. Read the Rack and Server Precautions in the next section.

2-3 Preparing for Setup

The box the SuperServer 7043M-8/7043M-6 was shipped in may include two sets of rail assemblies, two rail mounting brackets and mounting screws needed for installing the system into a rack (optional kit). Follow the steps in the order given to complete the installation process in a minimum amount of time. Please read this section in its entirety before you begin the installation procedure outlined in the sections that follow.

Choosing a Setup Location:

- Leave enough clearance in front of the system to enable you to open the front door completely (~25 inches).
- Leave approximately 30 inches of clearance in the back of the system to allow for sufficient airflow and ease in servicing.

Warnings and Precautions!

Rack Precautions:

- Ensure that the leveling jacks on the bottom of the rack are fully extended to the floor with the full weight of the rack resting on them.
- In single rack installation, stabilizers should be attached to the rack.
- In multiple rack installations, the racks should be coupled together.
- Always make sure the rack is stable before extending a component from the rack.
- You should extend only one component at a time - extending two or more simultaneously may cause the rack to become unstable.

Server Precautions:

- Review the electrical and general safety precautions in Chapter 4.
- Determine the placement of each component in the rack *before* you install the rails.
- Install the heaviest server components on the bottom of the rack first, and then work up.
- Use a regulating uninterruptible power supply (UPS) to protect the server from power surges, voltage spikes and to keep your system operating in case of a power failure.
- Allow the hot plug SCSI drives and power supply units to cool before touching them.
- Always keep the rack's front door and all panels and components on the servers closed when not servicing to maintain proper cooling.

2-4 Installing the 7043M-8/7043M-6 into a Rack

This section provides information on installing the SuperServer 7043M-8/7043M-6 into a rack unit. If the 7043M-8/7043M-6 has already been mounted into a rack or if you are using it as a tower, you can skip ahead to Sections 2-5 and 2-6. There are a variety of rack units on the market, which may mean the assembly procedure will differ slightly. The following is a guideline for installing the 7043M-8/7043M-6 into a rack with the rack rails provided in the rackmount kit. You should also refer to the installation instructions that came with the rack unit you are using.

Identifying the Sections of the Rack Rails:

The 7043M-8/7043M-6 rackmount kit (CSE-PT26 or CSE-PT26B - black) includes two rack rail assemblies. Each of these assemblies consist of three sections: an inner fixed chassis rail that secures to the 7043M-8/7043M-6 (A), an outer fixed rack rail that secures directly to the rack itself (B) and a sliding rail guide sandwiched between the two, which should remain attached to the fixed rack rail (see Figure 2-1.) The A and B rails must be detached from each other to install. Two chassis handles are also included with the rail kit.

To remove the fixed chassis rail (A), pull it out as far as possible - you should hear a "click" sound as a locking tab emerges from inside the rail assembly and locks the inner rail. Depress the locking tab to pull the inner rail completely out. Do this for both assemblies.

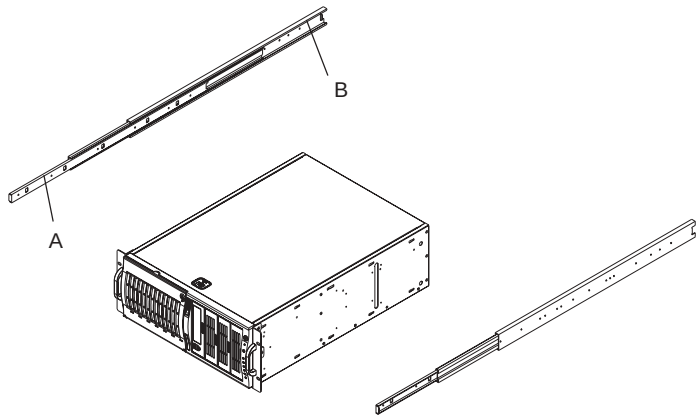


Figure 2-1. Identifying the Sections of the Rack Rails

Installing the Chassis Rails:

You will need to remove the top cover, the top/left cover and the feet to add rack rails to the chassis. First, remove the top/left cover by pushing the release tab in the center of the cover lip while pushing the cover toward the rear of the chassis (see Figure 2-2). After the cover stops, lift it off. Each chassis foot has a single screw. Remove the screw then depress the foot's locking tab from the inside of the chassis to slide the foot off. Next, remove the top cover. You should see a release tab at the middle of the lip. Push this tab toward the chassis edge while pushing the cover toward the front of the chassis. It should then lift right off. You can now attach rack rails to the top and bottom (now the sides) of the chassis. First add the rack handles as shown in Figure 2-3. Then position the fixed chassis rail sections you just removed along the side of the 7043M-8/7043M-6 making sure the screw holes line up. Note that these two rails are left/right specific. Screw the rail securely to the side of the chassis (see Figure 2-4). Repeat this procedure for the other rail on the other side of the chassis. You will also need to attach the rail brackets when installing into a telco rack.

Locking Tabs: As mentioned, both chassis rails have a locking tab, which serves two functions. The first is to lock the server into place when installed and pushed fully into the rack, which is its normal position. Secondly, these tabs also lock the server in place when fully extended from the rack. This prevents the server from coming completely out of the rack when you pull it out for servicing.

Figure 2-2. Removing the Top/Left Cover

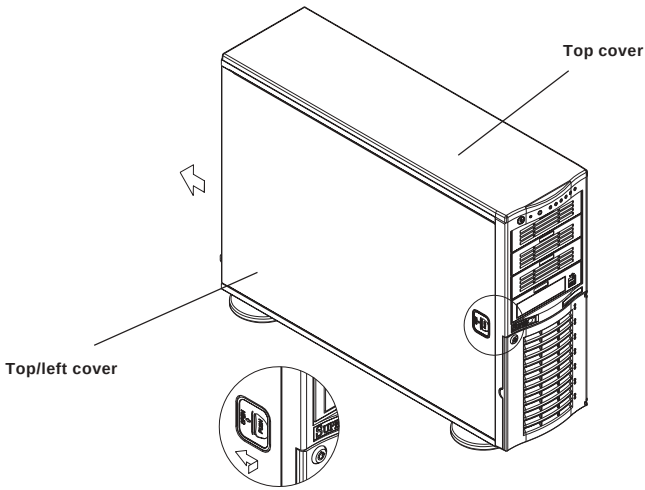
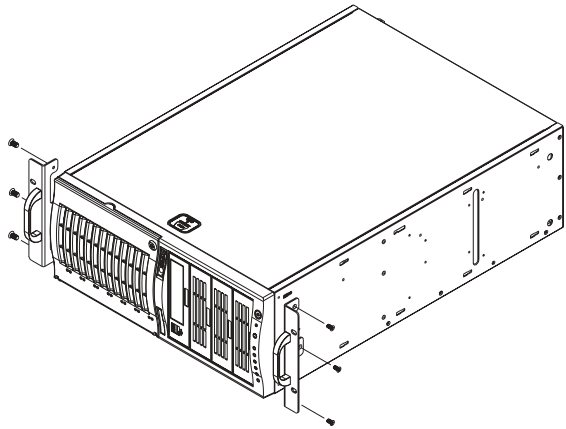


Figure 2-3. Installing the Rack Handles



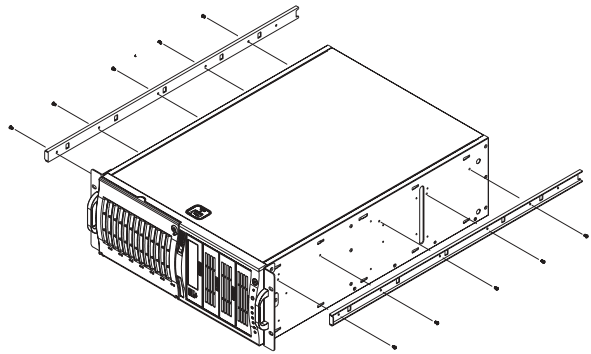


Figure 2-4. Installing the Rails to the Chassis

Installing the Rack Rails:

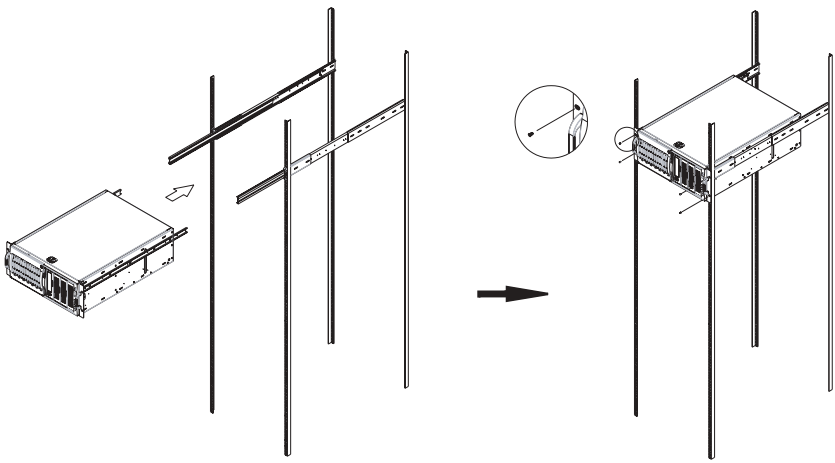
Determine where you want to place the SuperServer 7043M-8/7043M-6 in the rack. (See Rack and Server Precautions in Section 2-3.) Position the fixed rack rail/sliding rail guide assemblies at the desired location in the rack, keeping the sliding rail guide facing the inside of the rack. Screw the assemblysecurely to the rack using the brackets provided. Attach the other assembly to the other side of the rack, making both are at the exact same height and with the rail guides facing inward.

Installing the Server into the Rack:

You should now have rails attached to both the chassis and the rack unit. The next step is to install the server into the rack. Do this by lining up the rear of the chassis rails with the front of the rack rails. Slide the chassis rails into the rack rails, keeping the pressure even on both sides (you may have to depress the locking tabs when inserting).

When the server has been pushed completely into the rack, you should hear the locking tabs "click". Finish by inserting and tightening the thumb-screws that hold the front of the server to the rack (see Figure 2-5).

Figure 2-5. Installing the Server into a Rack



2-5 Checking the Motherboard Setup

After setting up the the 7043M-8/7043M-6, you will need to open the unit to make sure the motherboard is properly installed and all the connections have been made.

1. Accessing the inside of the 7043M-8/7043M-6 (see Figure 2-6):

(If rack mounted, first release the retention screws that secure the unit to the rack. Grasp the two handles on either side and pull the unit straight out until it locks (you will hear a "click").) Depress the two buttons on the top (side if tower) of the chassis to release the cover. There is a large rectangular recess in the middle front of the cover to help you push the cover away from you until it stops. You can then lift the cover from the chassis to gain full access to the inside of the server.

2. Check the CPUs (processors):

You should have one or two processors already installed into the system board. Each processor should have its own heatsink attached. See Chapter 5 for instructions on processor installation.

3. CPU clock ratio setting:

The CPU speed should be automatically detected.

4. Check the system memory:

Your 7043M-8/7043M-6 server system may have come with system memory already installed. Make sure all DIMMs are fully seated in their slots. For details on adding system memory, refer to Chapter 5.

5. Installing add-on cards:

If desired, you can install add-on cards to the system. See Chapter 5 for details on installing PCI add-on cards.

6. Check all cable connections and airflow:

Make sure all power and data cables are properly connected and not blocking the chassis airflow. See Chapter 5 for details on cable connections.

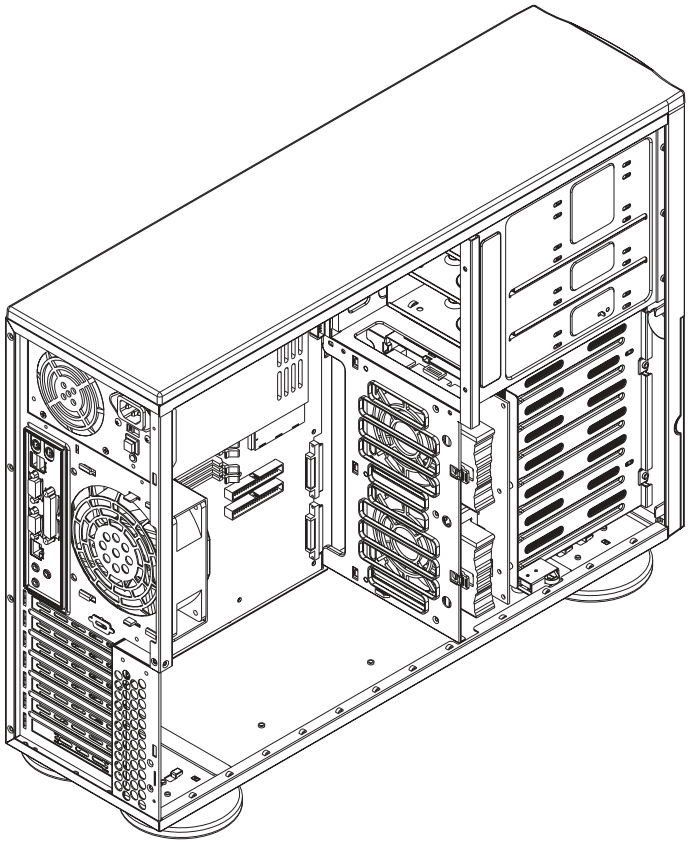


Figure 2-6. Accessing the Inside of the 7043M-8/7043M-6

2-6 Checking the Drive Bay Setup

Next, you should check to make sure the peripheral drives and the SCSI drives and SCA backplane have been properly installed and all connections have been made.

1. Accessing the drive bays:

All drives can be accessed from the front of the server. For servicing the CD-ROM and floppy drives, you will need to remove the top/left chassis cover. The SCSI disk drives can be installed and removed from the front of the chassis without removing any chassis covers.

2. Installing components into the 5.25" drive bay:

To install components into the 5.25" drive bays, you must first remove the top/left chassis cover as described in the previous section. Refer to Chapter 6 for details.

3. Installing CD-ROM and floppy disk drives:

Refer to Chapter 6 if you need to reinstall a CD-ROM and/or floppy disk drive to the system.

4. Check the SCSI disk drives:

Depending upon your system's configuration, your system may have one or more drives already installed. If you need to install SCSI drives, please refer to Chapter 6.

5. Check the airflow:

Airflow is provided by two 9-cm cooling fans and a heavy duty 12-cm exhaust fan. The system component layout was carefully designed to promote sufficient airflow through the 4U rackmount space. Also note that all power and data cables have been routed in such a way that they do not block the airflow generated by the fans. Keep this in mind when you reroute them after working on the system.

6. Supplying power to the system:

The last thing you must do is to provide input power to the system. Plug the power cord from the power supply units into a high-quality power strip that offers protection from electrical noise and power surges. It is recommended that you use an uninterruptible power supply (UPS). Finally, depress the power on button on the front of the chassis.

Chapter 3

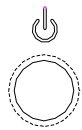
System Interface

3-1 Overview

There are several LEDs on the control panel as well as two for each SCSI drive carrier and LAN (Ethernet) port. These LEDs are to keep you constantly informed of the overall status of the system and the activity and health of specific components. There are also three buttons on the chassis control panel.

3-2 Control Panel Buttons

There are three push-button buttons located on the front of the chassis. These are (in order from left to right) a power on/off button, an NMI (Non-Maskable Interrupt) button and a reset button.



- **POWER:** This is the main power button, which is used to apply or turn off the main system power. Turning off system power with this button removes the main power but keeps standby power supplied to the system.

- **NMI:** NMI stands for "non-maskable interrupt". Pressing this button issues a non-maskable interrupt to force the server into a halt state. This is used for diagnostic purposes, and allows you to perform a memory download to determine the cause of a problem.

- **RESET:** Use the reset button to reboot the system.

3-3 Control Panel LEDs

The control panel located on the front of the SC742 chassis has six LEDs that provide you with critical information related to different parts of the system. This section explains what each LED indicates when illuminated and any corrective action you may need to take.

- **Power:** Indicates external power is being supplied to the system's power supply unit. This LED should normally be illuminated when the system is operating.

- **HDD:** Indicates IDE channel activity. On the SuperServer 7043M-8/7043M-6, this LED indicates CD-ROM drive activity when flashing.

- **NIC1:** Indicates network activity on LAN1 when flashing.

- **NIC2:** Indicates network activity on LAN2 when flashing.

- **Overheat:** Indicates a processor overheat condition. This may be caused by cables obstructing the airflow in the system or the ambient room temperature being too warm. You should also check to make sure that the chassis covers are installed and that all fans are present and operating normally. Finally, verify that the heatsinks are installed properly (see Chapter 5).

- **Power Fail:** Indicates a power supply fan has failed. The power supply will continue to operate with a secondary backup fan but will need to be replaced. Refer to Chapter 6 for details on replacing the power supply. This LED should be off when the system is operating normally.

3-4 SCSI Drive Carrier LEDs

Each SCSI drive carrier has two LEDs.

- **Green:** When illuminated, the green LED on the front of the SCSI drive carrier indicates drive activity. A connection to the SCSI SCA backplane enables this LED to blink on and off when that particular drive is being accessed.

- **Red:** A SAF-TE compliant backplane (optional) is needed to activate the red LEDs, which indicate a drive failure. Please refer to Chapter 6 for instructions on replacing failed SCSI drives.

3-5 LAN (Ethernet) Port LEDs

The Gb and the Mb LAN (Ethernet) ports both have two LEDs, which are used to give connectivity status as shown below. The yellow (left) LED flashes to indicate activity while the other (right) LED may flash green or orange to indicate the speed of the connection (there is no orange indication on the Mb port). See the tables below for the functions associated with these LEDs.

LAN LED Indicator (Left)

LED Color	Definition
Off	Not Active
Yellow	Active

LAN LED Indicator (Right)

LED Color	Definition
Off	No Connection
Green	100 MHz
Orange	1 GHz

Chapter 4

System Safety

4-1 Electrical Safety Precautions

Basic electrical safety precautions should be followed to protect yourself from harm and the SuperServer 7043M-8/7043M-6 from damage:

- Be aware of the locations of the power on/off switch on the chassis as well as the room's emergency power-off switch, disconnection switch or electrical outlet. If an electrical accident occurs, you can then quickly remove power from the system.

- Do not work alone when working with high voltage components.

- Power should always be disconnected from the system when removing or installing main system components, such as the motherboard, memory modules and the CD-ROM and floppy drives. When disconnecting power, you should first power down the system with the operating system and then unplug the power cords of all the power supply units in the system.

- When working around exposed electrical circuits, another person who is familiar with the power-off controls should be nearby to switch off the power if necessary.

- Use only one hand when working with powered-on electrical equipment. This is to avoid making a complete circuit, which will cause electrical shock. Use extreme caution when using metal tools, which can easily damage any electrical components or circuit boards they come into contact with.

- Do not use mats designed to decrease electrostatic discharge as protection from electrical shock. Instead, use rubber mats that have been specifically designed as electrical insulators.

- The power supply power cord must include a grounding plug and must be

plugged into grounded electrical outlets.

- Motherboard Battery: **CAUTION** - There is a danger of explosion if the onboard battery is installed backwards, which will reverse its polarities. The positive side of the battery should be facing up and the negative side should facing the motherboard. This battery must be replaced only with the same or an equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

- CD-ROM Laser: **CAUTION** - this server may have come equipped with a CD-ROM drive. To prevent direct exposure to the laser beam and hazardous radiation exposure, do not open the enclosure or use the unit in any unconventional way.

4-2 General Safety Precautions

Follow these rules to ensure general safety:

- Keep the area around the SuperServer 7043M-8/7043M-6 clean and free of clutter.

- The SuperServer 7043M-8/7043M-6 weighs approximately 46 lbs. (20.9 kg.) when fully loaded. When lifting the system, two people at either end should lift slowly with their feet spread out to distribute the weight. Always keep your back straight and lift with your legs.

- Place the chassis top/side cover and any system components that have been removed away from the system or on a table so that they won't accidentally be stepped on.

- While working on the system, do not wear loose clothing such as neckties and unbuttoned shirt sleeves, which can come into contact with electrical circuits or be pulled into a cooling fan.

- Remove any jewelry or metal objects from your body, which are excellent metal conductors that can create short circuits and harm you if they come into contact with printed circuit boards or areas where power is present.

- After accessing the inside of the system, close the system back up and (if rackmounted) secure it to the rack unit with the retention screws after ensuring that all connections have been made.

4-3 ESD Precautions

Electrostatic discharge (ESD) is generated by two objects with different electrical charges coming into contact with each other. An electrical discharge is created to neutralize this difference, which can damage electronic components and printed circuit boards. The following measures are generally sufficient to neutralize this difference before contact is made to protect your equipment from ESD:

- Use a grounded wrist strap designed to prevent static discharge.

- Keep all components and printed circuit boards (PCBs) in their antistatic bags until ready for use.

- Touch a grounded metal object before removing the board from the antistatic bag.

- Do not let components or PCBs come into contact with your clothing, which may retain a charge even if you are wearing a wrist strap.

- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or contacts.

- When handling chips or modules, avoid touching their pins.

- Put the motherboard and peripherals back into their antistatic bags when not in use.

- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.

4-4 Operating Precautions

Care must be taken to assure that all chassis covers are in place when the 7043M-8/7043M-6 is operating to ensure proper cooling. Out of warranty damage to the 7043M-8/7043M-6 system can occur if this practice is not strictly followed.

Chapter 5

Advanced Motherboard Setup

This chapter covers the steps required to install processors and heatsinks to the X5DMS-8GM/X5DMS-6GM motherboard, connect the data and power cables and install add-on cards. All motherboard jumpers and connections are described and a layout and quick reference chart are included in this chapter. Remember to close the chassis completely when you have finished working on the motherboard to protect and cool the system sufficiently.

5-1 Handling the X5DMS-8GM/X5DMS-6GM

Static electrical discharge can damage electronic components. To prevent damage to printed circuit boards, it is important to handle them very carefully (see Chapter 4). Also note that the size and weight of the motherboard can cause it to bend if handled improperly, which may result in damage. To prevent the motherboard from bending, keep one hand under the center of the board to support it when handling. The following measures are generally sufficient to protect your equipment from static discharge.

Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing any board from its antistatic bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the motherboard, add-on cards and peripherals back into their antistatic bags when not in use.

Unpacking

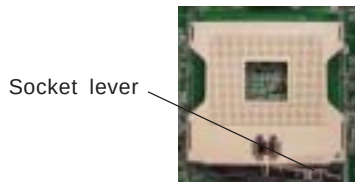
The motherboard is shipped in antistatic packaging to avoid static damage. When unpacking the board, make sure the person handling it is static protected.

5-2 PGA Processor and Heatsink Installation

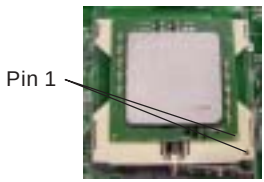
When handling the processor package, avoid placing direct pressure on the label area of the fan. Also, do not place the motherboard on a conductive surface, which can damage the BIOS battery and prevent the system from booting up.

IMPORTANT: Always connect the power cord last and always remove it before adding, removing or changing any hardware components. Make sure that you install the processor into the CPU socket **before** you install the heatsink. The X5DMS-8GM/X5DMS-6GM can support either one or two Intel Xeon processors of up to 3.20 GHz. If installing one processor only, install it into CPU socket #1.

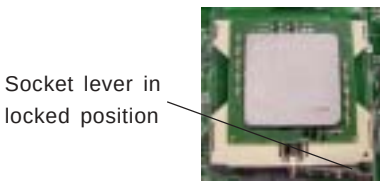
1. Lift the lever on the CPU socket. Lift the lever completely or you will damage the CPU socket when power is applied. (Install a processor into CPU #1 socket first.)



2. Install the CPU in the socket. Make sure that pin 1 of the CPU is seated on pin 1 of the socket (both corners are marked with a triangle). When using only one CPU, install it into CPU socket #1 (CPU socket #2 is automatically disabled if only one CPU is used).



3. Press the lever down until you hear it *click* into the locked position. See Figure 5-1 for pictures of the 604-pin CPU socket before and after the processor is installed.



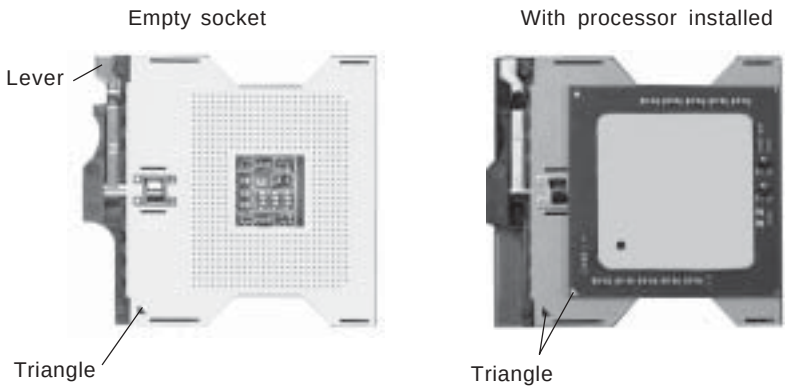
4. Apply the proper amount of thermal compound to the CPU die and place the heatsink on top of the CPU. Make sure the heatsink sits completely flat on the CPU. If not completely flat, the space between the two will degrade the heat dissipation function of the heatsink, which may cause the processor to overheat.

5. Secure the heatsink by locking each retention clip into its proper position. When correctly installed, the clips should *click* into place and the three black tabs on the CPU retention pieces should protrude fully through the corresponding holes on the each clip. See Figures 5-2a and 5-2b for diagrams of the retention clips and the heatsink installation procedure.

IMPORTANT: Please note that special, new silver heat sink retention clips must be used with all Xeon 533 MHz FSB (front side bus) 604-pin processors. These new retention clips have “604P” clearly marked on them. Using the old clips will not keep the proper amount of pressure applied and may cause the processor to overheat. In addition, you should not use these new retention clips with Xeon 400 MHz FSB processors (even in 604-pin CPU sockets) as they will be too tight and may damage the CPU socket.

6. If installing two processors, repeat these steps to install the second processor in the CPU #2 slot.

Figure 5-1. 604-pin PGA Socket: Empty and with Processor Installed



Warning! Make sure you lift the lever completely when installing the CPU. If the lever is only partly raised, damage to the socket or CPU may result.

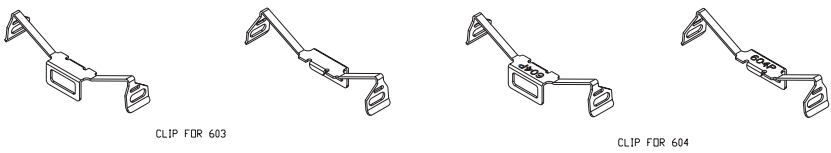


Figure 5-2a. Retention Clips (left: 603-pin, right: 604-pin)

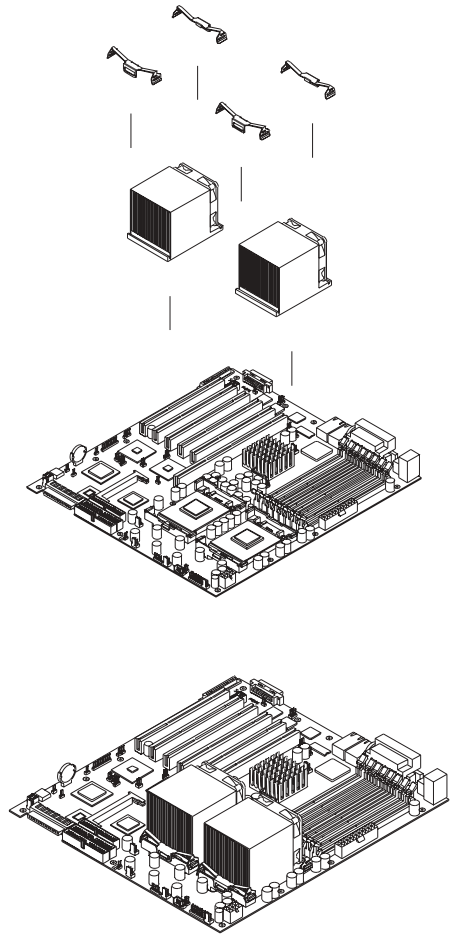


Figure 5-2b. Heatsink Installation (different motherboard shown)

5-3 Connecting Cables

Now that the processors are installed, the next step is to connect the cables to the board. These include the data (ribbon) cables for the peripherals and control panel and the power cables.

Connecting Data Cables

The ribbon cables used to transfer data from the peripheral devices have been carefully routed in preconfigured systems to prevent them from blocking the flow of cooling air that moves through the system from front to back. If you need to disconnect any of these cables, you should take care to keep them routed as they were originally after reconnecting them (make sure the red wires connect to the pin 1 locations). If you are configuring the system, keep the airflow in mind when routing the cables. The following data cables (with their motherboard connector locations noted) should be connected. See the motherboard layout figure in this chapter for connector locations.

- IDE Device Cables (IDE#1, IDE#2)
- Floppy Drive Cable (JP7)
- Ultra 320/160 LVD SCSI Cables (JA1 and JA2)
- Control Panel Cable (JF2, see next page)

Connecting Power Cables

The X5DMS-8GM/X5DMS-6GM has a 24-pin primary power supply connector designated "ATX Power" for connection to the ATX power supply. Connect the appropriate connector from the power supply to the "ATX Power" connector to supply power to the motherboard. The Processor Power Connector (at J15) must also be connected to your power supply. See the Connector Definitions section in this chapter for power connector pin definitions.

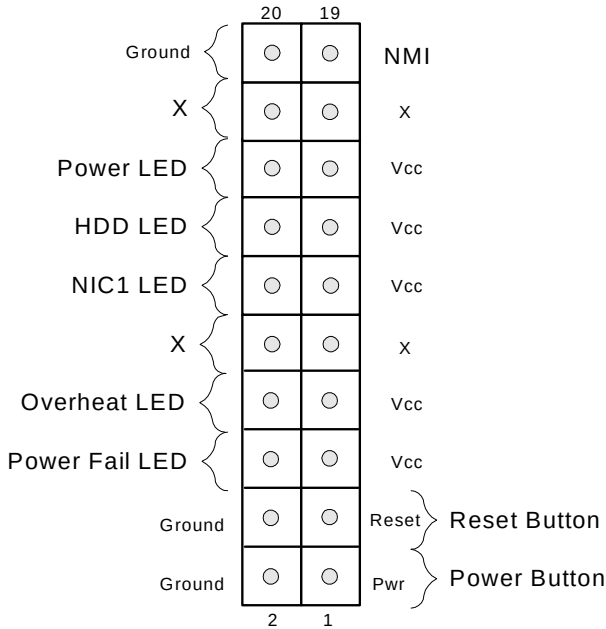
Connecting the Control Panel

JF2 contains header pins for various front control panel connectors. See Figure 5-3 for the pin locations of the various front control panel buttons and LED indicators. Please note that even and odd numbered pins are on opposite sides of each header.

All JF2 wires have been bundled into single ribbon cable to simplify their connection. Make sure the red wire plugs into pin 1 as marked on the board. The other end connects to the Control Panel printed circuit board, located just behind the system status LEDs in the chassis.

See the Connector Definitions section in this chapter for details and pin descriptions of JF2.

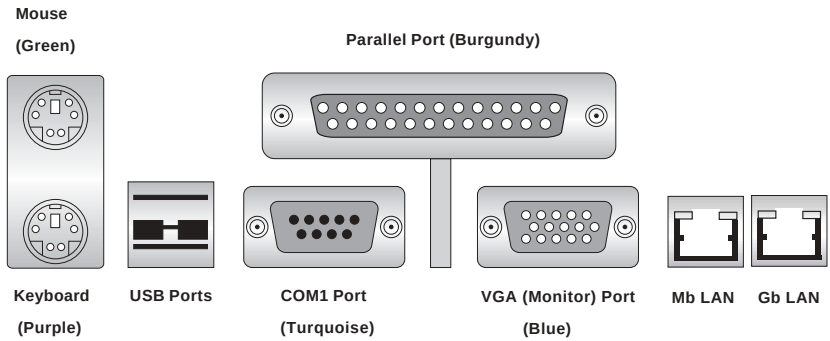
Figure 5-3. Front Control Panel Header Pins



5-4 I/O Ports

The I/O ports are color coded in conformance with the PC 99 specification. See Figure 5-4 below for the colors and locations of the various I/O ports.

Figure 5-4. Rear Panel I/O Ports



5-5 Installing Memory

Note: Check the Supermicro web site for recommended memory modules: http://www.supermicro.com/TECHSUPPORT/FAQs/Memory_vendors.htm

CAUTION

Exercise extreme care when installing or removing DIMM modules to prevent any possible damage. Also note that the memory is interleaved to improve performance (see step 1).

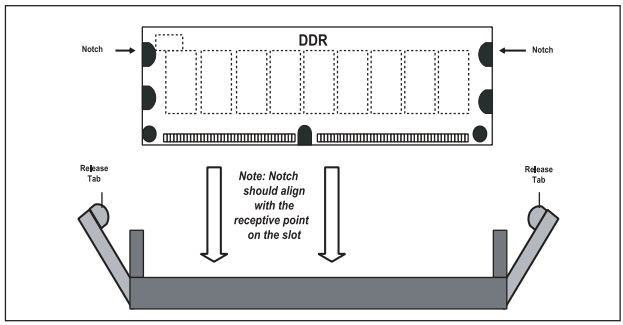
DIMM Installation (See Figure 2-2)

1. Insert the desired number of DIMMs into the memory slots, starting with Bank 1. The memory scheme is interleaved so you must install two modules at a time, beginning with Bank 1, then Bank 2, then Bank 3.
2. Insert each DIMM module vertically into its slot. Pay attention to the notch along the bottom of the module to prevent inserting the DIMM module incorrectly.
3. Gently press down on the DIMM module until it snaps into place in the slot. Repeat for all modules (see step 1 above).

Memory Support

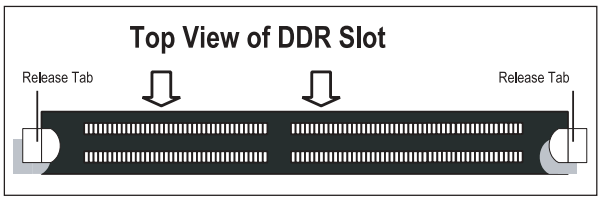
The X5DMS-8GM/X5DMS-6GM can support up to 12 GB of ECC registered DDR266/200 (PC2100/1600) SDRAM memory. PC100/133 SDRAM is not supported.

Figure 5-5a. Side View of DIMM Installation into Slot



To Install: Insert module vertically and press down until it snaps into place. Pay attention to the bottom notch.
To Remove: Use your thumbs to gently push each release tab outward to free the DIMM from the slot.

Figure 5-5b. Top View of DIMM Slot



5-6 Adding PCI Cards

1. PCI expansion slots:

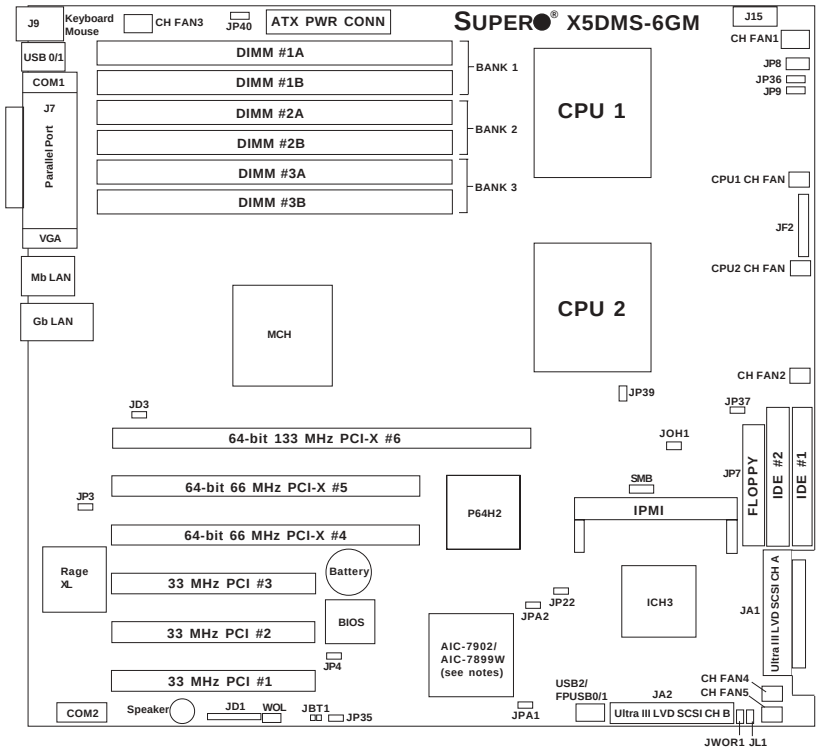
The X5DMS-8GM/X5DMS-6GM system board has one 64-bit 133 MHz and two 64-bit 66 MHz PCI-X slots and three 32-bit 33 MHz PCI slots. The backplane of the 7043M-8/7043M-6 has seven I/O slots that allows you to have a full complement of PCI cards installed on the system.

2. PCI card installation:

Before installing a PCI add-on card, make sure you choose the correct slot for the type of card you are installing (see step 1, above). Begin by removing the I/O shield from the backplane of the server corresponding to the PCI slot you wish to populate. Insert the card into the slot on the motherboard, pushing down with your thumbs evenly on both sides of the card. Finish by using a screw to secure the top of the card shield to the chassis. The I/O shields protect the motherboard and its components from EMI (electromagnetic interference) and aids in proper ventilation of the server, so make sure there is always a shield covering each slot.

5-7 Motherboard Details

Figure 5-7. SUPER X5DMS-8GM/X5DMS-6GM Layout
(not drawn to scale)



Notes:

The IPMI socket is an optional feature.

Jumpers not noted are for test purposes only.

The only difference between the X5DMS-8GM and X5DMS-6GM is the SCSI controller; the X5DMS-8GM has an AIC-7902 controller for Ultra320 SCSI and the X5DMS-6GM has an AIC-7899 controller for Ultra160 SCSI.

X5DMS-8GM/X5DMS-6GM Quick Reference

Jumper	Description	Default Setting
JBT1	CMOS Clear	See Section 5-9
JPA1/JPA2	SCSI CH A/B Termination	Open (Enabled)
JP3/JD3	Mb/Gb LAN Enable/Disable	Pins 1-2 (Enabled)
JP4	VGA Enable/Disable	Pins 1-2 (Enabled)
JP9	3rd P/S Fail Alarm En/Dis	Open (Disabled)
JP22	SCSI Enable/Disable	Pins 1-2 (Enabled)
JP37	Watch Dog Enable/Disable	Open (Disabled)
JP39	Front Side Bus Speed	Pins 1-2 (Auto)
JP40	Main Power Override	Open (Normal)

Connector	Description
ATX PWR CONN	Primary ATX Power Connector
DIMM#1A-DIMM#3B	Memory (RAM) Slots
COM1/COM2	COM1/COM2 Serial Port Connector
CPU/CHS/OH FAN	CPU/Chassis/Overheat Fan Headers
Gb LAN	Gb LAN (Ethernet) Port
IDE#1/IDE#2	IDE #1/#2 Hard Disk Drive Connectors
FPUSB0/1	Front Side USB0/1 Headers
J7	Parallel (Printer) Port
J9	PS/2 Keyboard/Mouse Ports
J15*	Processor Power Connector
JA1/JA2**	Ultra320/160 LVD SCSI CH A/B Connector
JD1	PWR LED Header / Speaker Header/Jumper
JF2	Front Control Panel Connector
JL1	Chassis Intrusion Header
JOH1	Overheat LED
JP7	Floppy Disk Drive Connector
JP8	Third Power Supply Fail Header
JP35	Keylock Switch Connector
JP36	3rd Power Supply Alarm Reset Switch
JWOR1	Wake-on-Ring Header
Mb LAN	Mb LAN (Ethernet) Port
Speaker	Onboard Speaker Header
USB2	USB2 Header
VGA	VGA Display (Monitor) Port
WOL	Wake-on-LAN Header

* The 8-pin, 12v Processor Power connector at J15 must also be connected to your power supply.
** X5DMS-8GM: Ultra320 SCSI, X5DMS-6GM: Ultra160 SCSI

5-8 Connector Definitions

ATX Power Connector

The X5DMS-8GM/X5DMS-6GM power supply connector meets the SSI (Superset ATX) 24-pin specification, however it also supports a 20-pin power supply connector. Make sure that the orientation of the PS connector is correct.

ATX Power Supply 24-pin Connector Pin Definitions

Pin Number	Definition	Pin Number	Definition
13	+3.3V	1	+3.3V
14	-12V	2	+3.3V
15	COM	3	COM
16	PS_ON#	4	+5V
17	COM	5	COM
18	COM	6	+5V
19	COM	7	COM
20	Res(NC)	8	PWR_OK
21	+5V	9	5VSB
22	+5V	10	+12V
23	+5V	11	+12V
24	COM	12	+3.3V

Processor Power Connector

In addition to the Primary ATX power connector (above), the 8-pin, 12v Processor Power connector at J15 must also be connected to your power supply. See the table on the right for pin definitions.

8-Pin +12v Power Supply Connector (J15)

Pins	Definition
1 thru 4	Ground
5 thru 8	+12v

NMI Button

The non-maskable interrupt button header is located on pins 19 and 20 of JF2. Refer to the table on the right for pin definitions.

NMI Button Pin Definitions (JF2)

Pin Number	Definition
19	Control
20	Ground

Power LED

The Power LED connection is located on pins 15 and 16 of JF2. Refer to the table on the right for pin definitions.

Power LED Pin Definitions (JF2)

Pin Number	Definition
15	Vcc
16	Control

HDD LED

The HDD LED (for IDE Hard Disk Drives) connection is located on pins 13 and 14 of JF2. Attach the IDE hard drive LED cable to these pins to display disk activity. Refer to the table on the right for pin definitions.

HDD LED Pin Definitions (JF2)

Pin Number	Definition
13	Vcc
14	HD Active

NIC1 LED

The NIC1 (Network Interface Controller) LED connection is located on pins 11 and 12 of JF2. Attach the NIC1 LED cable to display network activity. Refer to the table on the right for pin definitions.

NIC1 LED Pin Definitions (JF2)

Pin Number	Definition
11	Vcc
12	GND

NIC2 LED

The NIC2 (Network Interface Controller) LED connection is located on pins 9 and 10 of JF2. Attach the NIC2 LED cable to display network activity. Refer to the table on the right for pin definitions.

NIC2 LED Pin Definitions (JF2)

Pin Number	Definition
9	Vcc
10	GND

Overheat LED (OH)

Connect an LED to the OH connection on pins 7 and 8 of JF2 to provide advanced warning of chassis overheating. Refer to the table on the right for pin definitions.

Overheat (OH) LED Pin Definitions (JF2)

Pin Number	Definition
7	Vcc
8	GND

Power Fail Button

The Power Fail Button connection is located on pins 5 and 6 of JF2. Refer to the table on the right for pin definitions.

Power Fail Button Pin Definitions (JF2)

Pin Number	Definition
5	Vcc
6	GND

Reset Button

The Reset Button connection is located on pins 3 and 4 of JF2. Attach it to the hardware reset switch on the computer case. Refer to the table on the right for pin definitions.

Reset Pin Definitions (JF2)

Pin Number	Definition
3	Reset
4	Ground

Power Button

The Power Button connection is located on pins 1 and 2 of JF2. Momentarily contacting both pins will power on/off the system. This button can also be configured to function as a suspend button (see the Power Button Mode setting in BIOS). To turn off the power when set to suspend mode, depress the button for at least 4 seconds. Refer to the table on the right for pin definitions.

Power Button Connector Pin Definitions (JF2)

Pin Number	Definition
1	PW_ON
2	Ground

Chassis Intrusion

A Chassis Intrusion header is located at JL1. Attach the appropriate cable to inform you of a chassis intrusion.

Universal Serial Bus (USB0/1)

Two Universal Serial Bus ports are located beside the PS/2 keyboard/mouse ports. USB0 is the bottom connector and USB1 is the top connector. See the table on the right for pin definitions.

Universal Serial Bus Pin Definitions

USB0		USB1	
Pin Number	Definition	Pin Number	Definition
1	+5V	1	+5V
2	P0-	2	P0-
3	P0+	3	P0+
4	Ground	4	Ground
5	N/A	5	Key

Extra Universal Serial Bus Headers

Extra USB headers (FPUSB0/1 and USB2) are included on the motherboard. FPUSB0/1 were designed to provide front side USB access. You will need a USB cable (not included) for these headers. Refer to the tables on the right for pin definitions.

USB2 Pin Definitions (J13)

Pin Number	Definition
2	Power
4	-
6	+
8	Ground
10	Key

USB3 Pin Definitions (J14)

Pin Number	Definition
1	Power
3	-
5	+
7	Ground
9	Key

Serial Ports

The COM1 serial port is located under the parallel port (see Figure 5-4). See the table on the right for pin definitions. The COM2 connector is a header located near the PCI-X #1 slot on the motherboard.

Serial Port Pin Definitions (COM1, COM2)

Pin Number	Definition	Pin Number	Definition
1	CD	6	DSR
2	RD	7	RTS
3	TD	8	CTS
4	DTR	9	RI
5	Ground	10	NC

Note: Pin 10 is included on the header but not on the port.

LAN (Ethernet) Ports

Two Ethernet ports are located beside the VGA port on the IO backplane. These ports accept RJ45 type cables. See Figure 5-4 for port definitions.

ATX PS/2 Keyboard and PS/2 Mouse Ports

The ATX PS/2 keyboard and the PS/2 mouse are located on J9. See the table on the right for pin definitions. (The mouse port is above the keyboard port. See Figure 5-4.)

PS/2 Keyboard and Mouse Port Pin Definitions (J9)

Pin Number	Definition
1	Data
2	NC
3	Ground
4	VCC
5	Clock
6	NC

Fan Headers

The motherboard has several fan headers designated CPU1 Chassis Fan, CPU2 Chassis Fan, Chassis Fan3, Chassis Fan4 and Chassis Fan5. The first two attach to the fans on the CPU heatsinks. See the table on the right for pin definitions. Only the CPU1Chassis Fan, CPU2 Chassis Fan and Chassis Fan 3 are monitored by the hardware monitor logic (see BIOS).

Fan Header Pin Definitions

Pin Number	Definition
1	Ground (black)
2	+12V (red)
3	Tachometer

Caution: These fan headers are DC power.

Power LED/Speaker (JD1)

On the JDI header, pins 1-3 are for the PWR LED and pins 4-7 are for the speaker connection. See the table on the right for speaker pin definitions. Note: The speaker connector pins are for use with an external speaker. If you wish to use the onboard speaker, you should close pins 6-7 with a jumper. (Note that the two pins beside the PWR LED header is for JP37 and not part of JD1 - see silkscreen on motherboard.)

Speaker Connector Pin Definitions (JD1)

Pin Number	Function	Definition
6	+	Red wire, Speaker data
7	Key	No connection
8		Key
9		Speaker data

Third Power Supply Fail Header

Connect a cable from your power supply to the JP8 header to provide warning of power supply failure. This warning signal is passed through the PWR_LED pin on JF2 to indicate of a power failure on the chassis. See the table on the right for pin definitions.

Third Power Supply Fail Header Pin Definitions (JP8)

Pin Number	Definition
1	P/S 1 Fail Signal
2	P/S 2 Fail Signal
3	P/S 3 Fail Signal
4	Reset (from MB)

Note: This feature is only available when using redundant Supermicro power supplies and so does not apply to the 7043M-8/7043M-6.

Keylock

The keyboard lock connection is located on JP35. Utilizing this header allows you to inhibit any actions made on the keyboard, effectively "locking" it.

Wake-On-LAN

The Wake-On-LAN header is designated WOL. See the table on the right for pin definitions. You must enable the LAN Wake-Up setting in BIOS to use this feature. You must also have a LAN card with a Wake-on-LAN connector and cable.

Wake-On-LAN Pin Definitions (WOL)

Pin Number	Definition
1	+5V Standby
2	Ground
3	Wake-up

Wake-On-Ring

The Wake-On-Ring header is designated JWOR1. This function allows your computer to receive and "wake-up" by an incoming call to the modem when in suspend state. See the table on the right for pin definitions. You must have a Wake-On-Ring card and cable to use this feature.

Wake-on-Ring Pin Definitions (JWOR1)

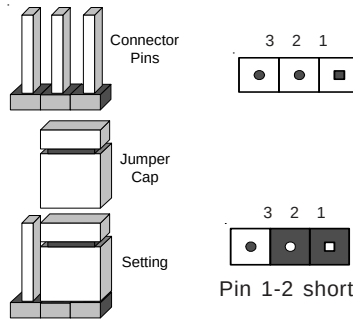
Pin Number	Definition
1	Ground
2	Wake-up

5-9 Jumper Settings

Explanation of Jumpers

To modify the operation of the motherboard, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. See the motherboard layout pages for jumper locations.

Note: On two pin jumpers, "Closed" means the jumper is on and "Open" means the jumper is off the pins.



CMOS Clear

JBT1 is used to clear CMOS. Instead of pins, this jumper consists of contact pads to prevent accidentally clearing the contents of CMOS.

To clear CMOS,

1) First shutdown the system and unplug the power cord(s).
2) With the power disconnected, short the CMOS pads with a metal object such as a small screwdriver.
3) Remove the screwdriver (or shorting device).
4) Reconnect the power cord(s) and power on the system.

Note: *Do not use the PW_ON connector to clear CMOS.*

Main Power Override

Instead of using the chassis power on switch, you may close jumper JP40 to apply power to the system. This effectively disables the power button from turning off the system. See the table on the right for jumper settings. The default setting is Open (normal).

Power On Jumper Settings (JP40)

Jumper Position	Definition
Open	Normal
Closed	Force Power On

Mb LAN Enable/Disable

Change the setting of jumper JP3 to enable or disable the Mb LAN port on the motherboard (see Figure 5-4 for location). Refer to the table on the right for jumper settings. The default setting is Enabled.

Mb LAN Enable/Disable Jumper Settings (JP3)

Jumper Position	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

Gb LAN Enable/Disable

Change the setting of jumper JD3 to enable or disable the Gb LAN port on the motherboard. (see Figure 5-4 for location). Refer to the table on the right for jumper settings. The default setting is Enabled.

Gb LAN Enable/Disable Jumper Settings (JD3)

Jumper Position	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

VGA Enable/Disable

JP4 allows you to enable or disable the VGA port. The default position is on pins 1 and 2 to enable VGA. See the table on the right for jumper settings.

VGA Enable/Disable Jumper Settings (JP4)

Jumper Position	Definition
1-2	Enabled
2-3	Disabled

Third Power Supply Alarm Enable/Disable

The system will notify you in the event of a power supply failure. This feature assumes that three power supply units are installed in the chassis, with one acting as a backup. If you only have one or two power supply units installed, you should disable this (the default setting) with JP9 to prevent false alarms. See the table on the right for jumper settings.

Third Power Supply Alarm Enable/Disable Jumper Settings (JP9)

Jumper Position	Definition
Open	Disabled
Closed	Enabled

SCSI Enable/Disable

The SCSI Termination jumper at JP22 allows you to enable or disable the onboard SCSI controller. The normal (default) position is on pins 1-2 to enable SCSI termination. See the table on the right for jumper settings.

SCSI Enable/Disable Jumper Settings (JP22)

Jumper Position	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

SCSI Termination Enable/ Disable

Jumper JPA1 and JPA2 allow you to enable or disable termination for the SCSI channel. (The 7043M-6 has a single channel SCSI backplane, therefore JPA2 - included for a second SCSI channel - is unused). The normal (default) setting is open to enable (teminate) the SCSI channel(s). If you wish to connect external SCSI devices, you should disable termination for the channel. See the table on the right for jumper settings.

SCSI Channel Termination Enable/Disable Jumper Settings (JPA1/JPA2)

Jumper Position	Definition
Open	Enabled
Closed	Disabled

JPA2 is used on the 7043M-8 only.

Watch Dog Enable/Disable

Use JP37 to enable or disable the Watch Dog feature. The default position is open to disable the Watch Dog timer. The jumper must be used in conjunction with the Watch Dog enabled setting in BIOS (Advanced Setup > I/O Device Configuration). When enabled, Watch Dog can reboot your PC if an application is "hung up" or the system goes down. See the table on the right for jumper settings.

Watch Dog Timer Enable/ Disable Jumper Settings (JP37)

Jumper Position	Definition
Open	Disabled
Closed	Enabled

System Bus Speed

JP39 allows you to select Auto, 400 or 533 MHz for your system (front side) bus speed. The recommended Auto setting will automatically determine the system bus speed of your processor(s). See the table on the right for jumper settings.

System Bus Speed Jumper Settings (JP39)

Jumper Position	Definition
Pins 1-2	Auto
Pins 2-3	400 MHz
Open	533 MHz

"Auto" is the recommended setting.

5-10 Onboard Indicators

LAN (Ethernet) LEDs

The Gb and the Mb LAN (Ethernet) ports both have two LEDs, which are used to give connectivity status as shown below. The yellow (left) LED flashes to indicate activity while the other (right) LED may flash green or orange to indicate the speed of the connection (there is no orange indication on the Mb port). See the tables below for the functions associated with these LEDs.

LAN LED Indicator (Left)

LED Color	Definition
Off	Not Active
Yellow	Active

LAN LED Indicator (Right)

LED Color	Definition
Off	No Connection
Green	100 MHz
Orange	1 GHz

5-11 Parallel Port, Floppy/Hard Disk Drive and SCSI Connections

Note the following when connecting the floppy and hard disk drive cables:

- The floppy disk drive cable has seven twisted wires.
- A red mark on a wire typically designates the location of pin 1.
- A single floppy disk drive ribbon cable has 34 wires and two connectors to provide for two floppy disk drives. The connector with twisted wires always connects to drive A, and the connector that does not have twisted wires always connects to drive B.

Parallel Port Connector

The parallel (printer) port is located on J7. See the table on the right for pin definitions.

Parallel (Printer) Port Pin Definitions (J7)

Pin Number	Function	Pin Number	Function
1	Strobe-	2	Auto Feed-
3	Data Bit 0	4	Error-
5	Data Bit 1	6	Init-
7	Data Bit 2	8	SLCT IN-
9	Data Bit 3	10	GND
11	Data Bit 4	12	GND
13	Data Bit 5	14	GND
15	Data Bit 6	16	GND
17	Data Bit 7	18	GND
19	ACK	20	GND
21	BUSY	22	GND
23	PE	24	GND
25	SLCT	26	NC

Floppy Connector

The floppy connector is located on JP7. See the table below for pin definitions.

Floppy Connector Pin Definitions (JP7)

Pin Number	Function	Pin Number	Function
1	GND	2	FDHDIN
3	GND	4	Reserved
5	Key	6	FDEDIN
7	GND	8	Index-
9	GND	10	Motor Enable
11	GND	12	Drive Select B-
13	GND	14	Drive Select A-
15	GND	16	Motor Enable
17	GND	18	DIR-
19	GND	20	STEP-
21	GND	22	Write Data-
23	GND	24	Write Gate-
25	GND	26	Track 00-
27	GND	28	Write Protect-
29	GND	30	Read Data-
31	GND	32	Side 1 Select-
33	GND	34	Diskette

IDE Connectors

There are no jumpers to configure the onboard IDE#1 and #2 connectors. See the table on the right for pin definitions.

IDE Connector Pin Definitions (IDE#1, IDE#2)

Pin Number	Function	Pin Number	Function
1	Reset IDE	2	GND
3	Host Data 7	4	Host Data 8
5	Host Data 6	6	Host Data 9
7	Host Data 5	8	Host Data 10
9	Host Data 4	10	Host Data 11
11	Host Data 3	12	Host Data 12
13	Host Data 2	14	Host Data 13
15	Host Data 1	16	Host Data 14
17	Host Data 0	18	Host Data 15
19	GND	20	Key
21	DRQ3	22	GND
23	I/O Write-	24	GND
25	I/O Read-	26	GND
27	IOCHRDY	28	BALE
29	DACK3-	30	GND
31	IRQ14	32	IOCS16-
33	Addr 1	34	GND
35	Addr 0	36	Addr 2
37	Chip Select 0	38	Chip Select 1-
39	Activity	40	GND

Ultra320/160 SCSI Connectors

Refer to the table below for the pin definitions of the Ultra320 (7043M-8) or Ultra160 SCSI connectors (7043M-6) located at JA1 and JA2.

Ultra320/160 SCSI Connectors (JA1 and JA2)

Connector Contact Number	Signal Names	Connector Contact Number	Signal Names
1	+DB(12)	35	-DB(12)
2	+DB(13)	36	-DB(13)
3	+DB(14)	37	-DB(14)
4	+DB(15)	38	-DB(15)
5	+DB(P1)	39	-DB(P1)
6	+DB(0)	40	-DB(0)
7	+DB(1)	41	-DB(1)
8	+DB(2)	42	-DB(2)
9	+DB(3)	43	-DB(3)
10	+DB(4)	44	-DB(4)
11	+DB(5)	45	-DB(5)
12	+DB(6)	46	-DB(6)
13	+DB(7)	47	-DB(7)
14	+DB(P)	48	-DB(P)
15	GROUND	49	GROUND
16	DIFFSENS	50	GROUND
17	TERMPWR	51	TERMPWR
18	TERMPWR	52	TERMPWR
19	RESERVED	53	RESERVED
20	GROUND	54	GROUND
21	+ATN	55	-ATN
22	GROUND	56	GROUND
23	+BSY	57	-BSY
24	+ACK	58	-ACK
25	+RST	59	-RST
26	+MSG	60	-MSG
27	+SEL	61	-SEL
28	+C/D	62	-C/D
29	+REQ	63	-REQ
30	+I/O	64	-I/O
31	+DB(8)	65	-DB(8)
32	+DB(9)	66	-DB(9)
33	+DB(10)	67	-DB(10)
34	+DB(11)	68	-DB(11)

5-12 Installing Software Drivers

After all the hardware has been installed you must install the software drivers. The necessary drivers are all included on the Supermicro CD that came packaged with your motherboard. After inserting this CD into your CD-ROM drive, the display shown in Figure 5-8 should appear. (If this display does not appear, click on the My Computer icon and then on the icon representing your CD-ROM drive. Finally, double click on the S "Setup" icon.)

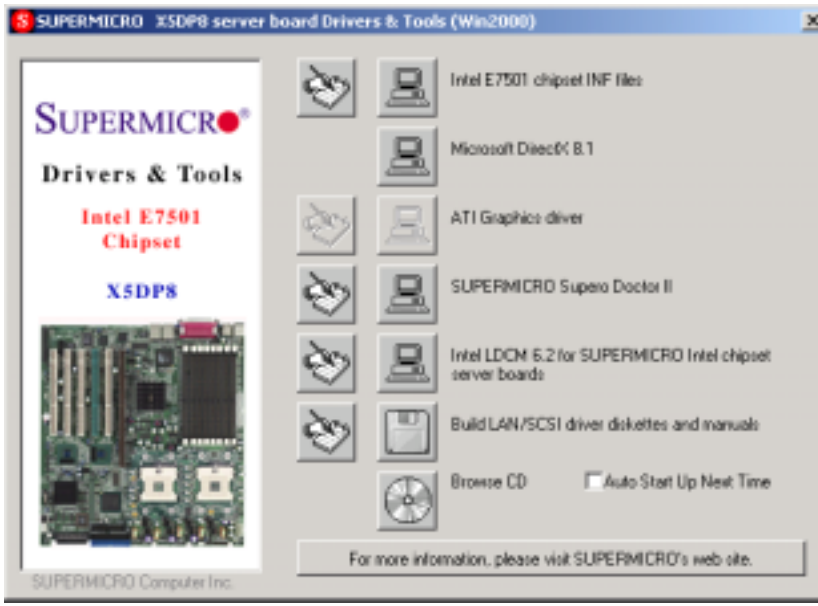

SUPERMICRO X5DP8 server board Drivers & Tools (Win2000)
SUPERMICRO
Drivers & Tools
Intel E7501
Chipset
X5DP8
SUPERMICRO Computer Inc.
Intel E7501 chipset INF files
Microsoft DirectX 8.1
ATI Graphics driver
SUPERMICRO Supero Doctor II
Intel LDCM 6.2 for SUPERMICRO Intel chipset server boards
Build LAN/SCSI driver diskettes and manuals
Browse CD
Auto Start Up Next Time
For more information, please visit SUPERMICRO's web site.

Figure 5-8. Driver/Tool Installation Display Screen

Click the icons showing a hand writing on paper to view the readme files for each item. The bottom icon with a CD on it allows you to view the entire contents of the CD.

Notes

Chapter 6

Advanced Chassis Setup

This chapter covers the steps required to install components and perform simple maintenance on the SC742 chassis. Following the component installation steps in the order given will eliminate most common problems. If some steps are unnecessary, skip ahead to the step that follows. Refer to Chapter 2 for instructions on installing the system as a 4U rackmount.

Tools Required

The only tool you will need is a Philips screwdriver.

6-1 Static-Sensitive Devices

Static electrical discharge can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully. The following measures are generally sufficient to protect your equipment from static discharge.

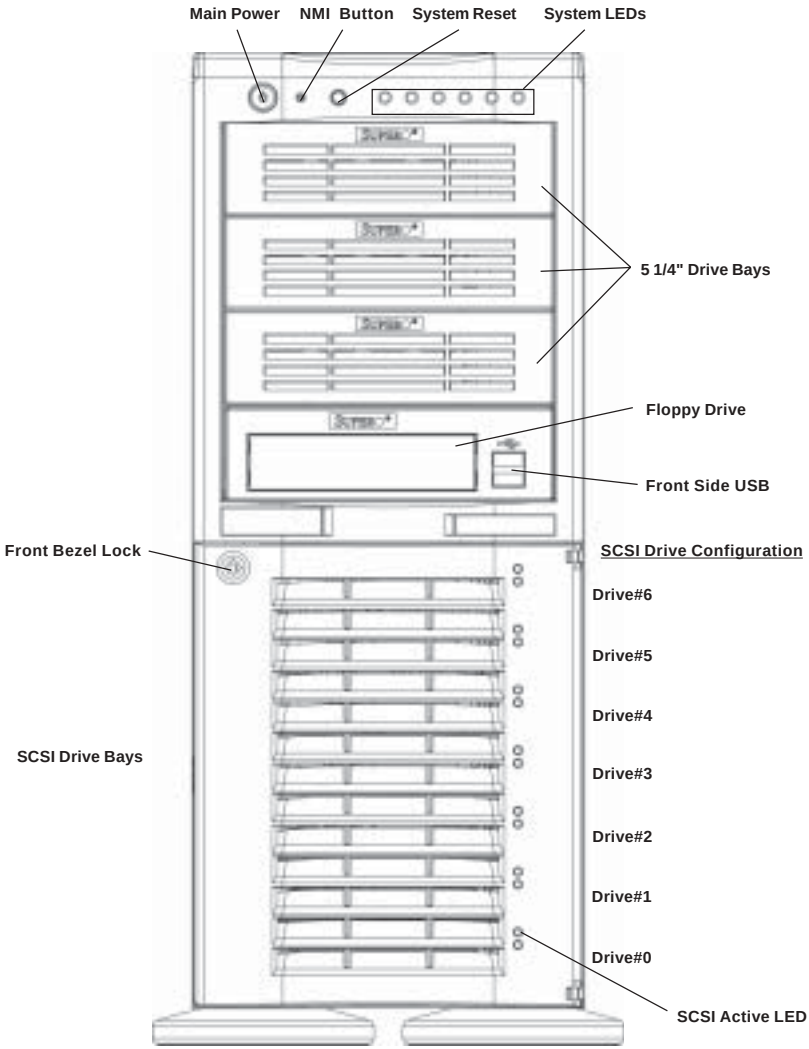
Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing any board from its antistatic bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the motherboard, add-on cards and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.

Unpacking

The motherboard is shipped in antistatic packaging. When unpacking the board, make sure the person handling it is static protected.

Figure 6-1. Chassis Front View



6-2 Front Control Panel

The front control panel must be connected to the JF2 connector on the motherboard to provide you with system status and alarm indications. A ribbon cable has bundled these wires together to simplify this connection. Connect the cable from JF2 on the motherboard (making sure the red wire plugs into pin 1) to the appropriate comnnector on the front control panel PCB (printed circuit board). Pull all excess cabling over to the control panel side of the chassis. The LEDs inform you of system status - see Figure 6-2 for details. Figure 6-1 is a front view of the chassis, which shows the chassis features and the drive bay setup.

Figure 6-2. Front Control Panel LEDs

Power Indicates power is being supplied to the system.

HDD Indicates IDE hard disk/CD-ROM drive activity.

NIC1 **1** Indicates network activity on LAN Port 1 (Mb LAN).

NIC2 **2** Indicates network activity on LAN Port 2 (Gb LAN).

Overheat Indicates an overheat condition in either one of the processors.

Power Fail Indicates a power supply failure.

6-3 System Fans

Two 9-cm chassis cooling fans located between the motherboard and the drive bays provide cool air intake for the system. A heavy duty 12-cm exhaust fan at the rear of the chassis pulls the cooling air through the system and expels the hot air. The power supply has two fans; a primary and a secondary.

Fan Failure

Under normal operation, both chassis fans, the exhaust fan and the primary power supply fan run continuously. If the primary power supply fan fails, the power fail LED on the control panel will illuminate, an alarm will sound and the secondary power supply fan will activate. The reset button on the back of the power supply will disable this alarm. The system can operate with only one power supply fan, but you should replace the power supply as soon as possible. Both chassis cooling fans (not the exhaust fan) are hot-swappable and can be replaced without powering down the system.

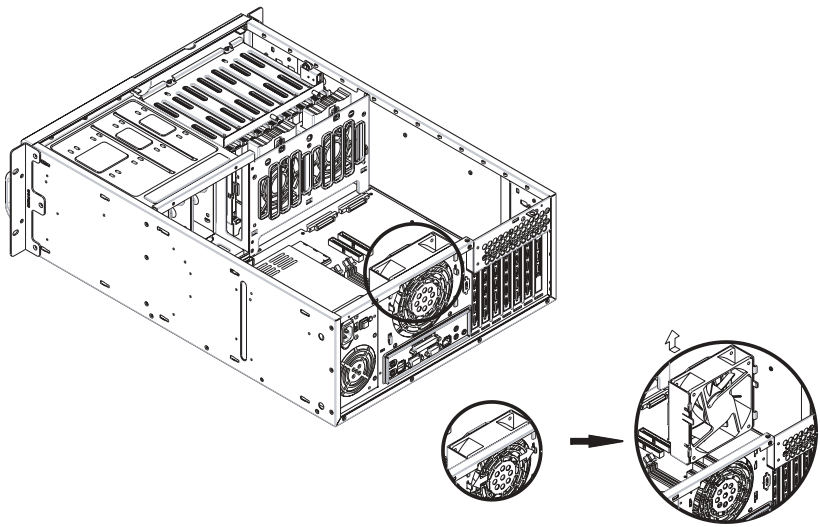
Replacing System Fans

1. Identifying the failed fan:
Inspect the back of the chassis to see if the 12-cm exhaust fan has failed. You must power down the system to replace this fan. To replace a failed chassis cooling fan, you must first remove the top/left chassis cover. Remove the two screws from the back lip of the top/left cover. Push in the release tab on the cover and push the cover toward the rear of the chassis until it stops (after moving about ½ inch). Then lift the cover up and off the chassis and see which fan has failed.

2. Removing a hot-plug fan housing:
Depress the locking tab on a chassis cooling fan and pull the unit straight out by the handle. The fan wiring for these two fans has been designed to detach automatically. The 12-cm exhaust fan is also in a housing that can be removed from the chassis (not hot-swappable - see Figure 6-3).

3. Installing a new system fan:
Replace the failed fan with an identical one (available from Supermicro). After the new fan has been installed in the original fan housing, reassemble the fan housing and plug the housing back into its slot. You should hear it click into place when fully inserted. Check that the fan is working properly. Finish by replacing the top/left side chassis panel.

Figure 6-3. Removing the 12-cm Exhaust Fan



6-4 Drive Bay Installation

A bezel covers the front of the chassis but does not need to be removed to access the drives. If you wish to remove the bezel piece, push on the three tabs on the inside left side lip of the front chassis cover. Then slightly swing out the same (left) side of the cover - about ½ inch only. Remove by pushing on the open side of the cover to remove it from the chassis (do not try to swing or pull it straight out after opening the left side.

SCSI Drives

After unlocking the SCSI drive bay door swing it open to access the SCSI drives. SCSI drive IDs are preconfigured as 0 through 6 in order from bottom to top (or from left to right if rackmounted) - see Figure 6-1.
Note: You must use standard 1" high, 80-pin SCA SCSI drives.

Use extreme caution when working around the SCSI backplane. Do not touch the backplane with any metal objects and make sure no ribbon cables touch the backplane or obstruct the airflow holes in the SCSI backplane.

1. Installing/removing hot-plug SCSI drives:

The seven SCSI drive carriers are all easily accessible at the front of the chassis. The SCSI drives are hot-pluggable, meaning they can be removed and installed without powering down the system. To remove a carrier, first open the front bezel then push the release button located beside the drive LEDs. Swing the colored handle fully out and use it to pull the unit straight out (see Figure 6-4). **Note:** Your operating system must have RAID support to enable the hot-plug capability of the SCSI drives.

2. Mounting a SCSI drive in a drive carrier:

The SCSI drives are mounted in drive carriers to simplify their installation and removal from the chassis. These carriers also work to promote proper airflow for the system. For this reason, even carriers without SCSI drives must remain in the server. If you need to add a new SCSI drive, insert the drive into the carrier with the printed circuit board side facing down so that the mounting holes align with those in the carrier. Secure the drive to the carrier with four screws. (See Figure 6-5.)

Figure 6-4. Removing a SCSI Drive Carrier

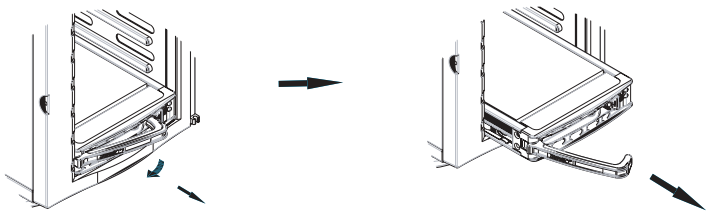
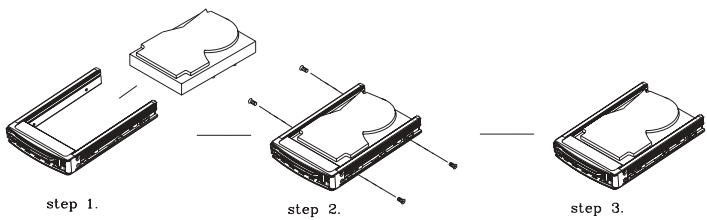


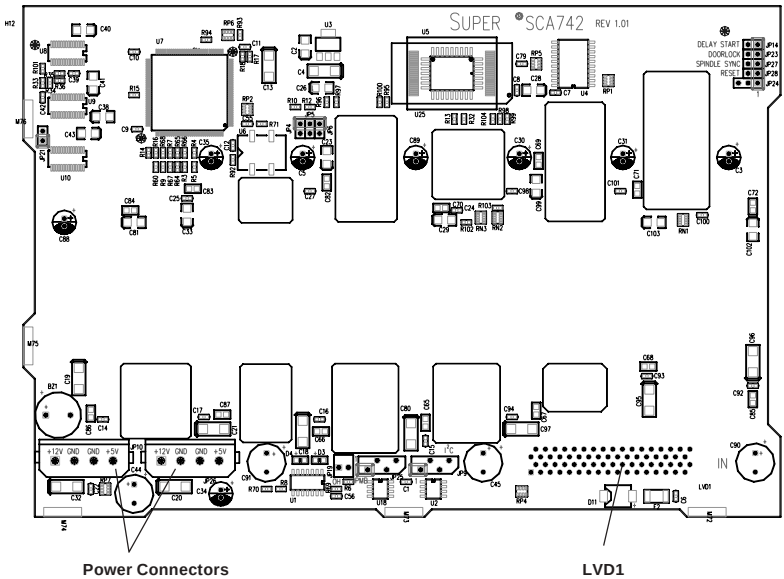
Figure 6-5. Mounting a SCSI Drive in a Carrier



3. SCSI backplane:

All seven SCSI drives plug into the SCSI backplane (p/n SCA742). The 7043M-8 provides single channel, Ultra320 operation while the 7043M-6 provides single channel, Ultra160 operation. There are no jumpers on the SCSI backplane. A ribbon cable from JA1 on the motherboard should be connected to the LVD1 connector on the SCSI backplane. There are also two power connectors on the backplane - both should be connected. See Figure 6-6 for the locations of backplane connectors - the reverse side of the backplane has seven connectors that the SCSI drives plug into when inserted with a SCSI drive carrier. See Figure 6-1 for drive number configuration. You cannot cascade the SCSI backplane.

Figure 6-6. SCA742 SCSI Backplane



Always route SCSI power and ribbon cables so that they do not impede airflow or interfere with running fans.

<u>Important:</u> Regardless of how many SCSI hard drives are installed, all 7 SCSI drive carriers must remain in the drive bays to promote proper airflow.

Installing Components in the 5 1/4" Drive Bays

1. Drive bay configuration

The 7043M-8/7043M-6 has four 5 1/4" drive bays above the SCSI drive bays. Components such as a floppy drive, IDE hard drives, CD-ROM drives or additional SCSI drives (that can fit into a standard IDE drive bay) can be installed in these 5 1/4" drive bays. SCSI drives installed here should be connected to the JA2 (SCSI channel B) connector on the motherboard.

2. Mounting components in the drive bays

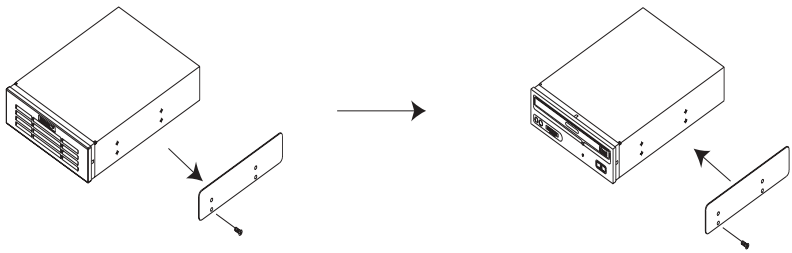
First power down the system and then remove the top/left chassis cover to access the drive components. With the cover off, remove the two or four screws that secure the drive carrier to the chassis (one side only) then push the entire empty drive carrier out from the back.

Adding a CD-ROM drive: remove the guide plate from right side of the empty drive carrier and screw it into the right side of the CD-ROM drive using the holes provided (see Figure 6-7). Then slide the CD-ROM into the bay and secure it to the chassis with the drive carrier screws you first removed. Attach the power and data cables to the drive. Replace the top/left chassis cover before restoring power to the system.

Adding an IDE, SCSI or floppy drive: to add one of these drives, install it into one of the removed empty drive carriers with the printed circuit board side toward the carrier so that the drive's mounting holes align with those in the carrier. Secure the drive to the carrier with four screws then slide the assembly into the bay and secure it to the chassis with the drive carrier screws you first removed. Attach the power and data cables to the drive. Replace the top/left chassis cover before restoring power to the system.

Note: A red wire typically designates the location of pin 1. You should keep the drive carriers inserted in any unused drive bays to reduce EMI and noise and to facilitate the airflow inside the chassis.

Figure 6-7. Adding a Component Without a Drive Carrier



6-5 Power Supply

The 7043M-8/7043M-6 has a single 450 watt redundant cooling power supply. The redundant cooling function is provided by two fans. The primary fan operates continuously and the secondary fan (along with an alarm and an LED) activate if either 1) the primary fan fails or 2) a temperature threshold is exceeded. If the primary fan fails, the power supply should be replaced as soon as possible. You must power down the system to replace the power supply. The power supply has an auto-switching capability that enables it to automatically sense and operate with either 100 or 240 volt inputs. The power supply is PFC (Power Factor Correction) compliant.

Power Supply Failure

If the primary power supply fan fails an audible alarm will notify you of a power unit failure. Disable the alarm by pressing the alarm reset switch on the back of the power supply. The PWR Fail LED and the LED on the back of the power supply will also illuminate and remain on (until the failed unit has been replaced).

Replacing the Power Supply

1. Accessing the power supply:
After powering down the system, you'll need to remove the left/top chassis cover to access the power supply for removal.

2. Removing the power supply:
First, unplug the power cord from the power supply. Then remove the power supply connectors going to the motherboard and the SCSI backplane. Finally, remove the screws that secure the unit to the mounting brackets in the chassis and then pull the unit completely out.

3. Installing a new power supply module:
Replace the failed unit with another unit having the exact same part number (SC742S-450). Gently but firmly push the new unit all the way into the open bay. Secure it to the mounting brackets in the chassis with the screws provided. Connect the two power cables to the SCSI backplane and the two to the motherboard (ATX PWR CONN and J15 connectors). Finish by replacing the chassis left/top cover and then restoring power to the system.

Notes

Chapter 7

BIOS

7-1 Introduction

This chapter describes the PhoenixBIOS™ Setup utility for the X5DMS-8GM/X5DMS-6GM. The Phoenix ROM BIOS is stored in a flash chip and can be easily upgraded using a floppy disk-based program.

Note: Due to periodic changes to the BIOS, some settings may have been added or deleted and might not yet be recorded in this manual. Please refer to the Manual Download area of the Supermicro web site <http://www.supermicro.com> for any changes to BIOS that may not be reflected in this manual.

System BIOS

The BIOS is the Basic Input Output System used in all IBM® PC, XT™, AT®, and PS/2® compatible computers. The PhoenixBIOS flash chip stores the system parameters, such type of disk drives, video displays, etc. in the CMOS. The CMOS memory requires very little electrical power. When the computer is turned off, a back-up battery provides power to the BIOS flash chip, enabling it to retain system parameters. Each time the computer is powered-on the computer is configured with the values stored in the BIOS ROM by the system BIOS, which gains control at boot-up.

How To Change the Configuration Data

The CMOS information that determines the system parameters may be changed by entering the BIOS Setup utility. This Setup utility can be accessed by pressing the <Delete> key at the appropriate time during system boot, see below.

Starting the Setup Utility

Normally, the only visible POST (Power On Self Test) routine is the memory test. As the memory is being tested, press the <Delete> key to enter the main menu of the BIOS Setup utility. From the main menu, you can access the other setup screens, such as the Security and Power menus. Beginning with Section 7-3, detailed descriptions are given for each parameter setting in the Setup utility.

7-2 Running Setup

Default settings are in bold text unless otherwise noted.

The BIOS setup options described in this section are selected by choosing the appropriate text from the main BIOS Setup screen. All displayed text is described in this section, although the screen display is often all you need to understand how to set the options (see on next page).

When you first power on the computer, the PhoenixBIOS™ is immediately activated.

While the BIOS is in control, the Setup program can be activated in one of two ways:

1. By pressing <Delete> immediately after turning the system on, or
2. When the message shown below appears briefly at the bottom of the screen during the POST (Power On Self-Test), press the <Delete> key to activate the main Setup menu:

Press the <Delete> key to enter Setup

7-3 Main BIOS Setup

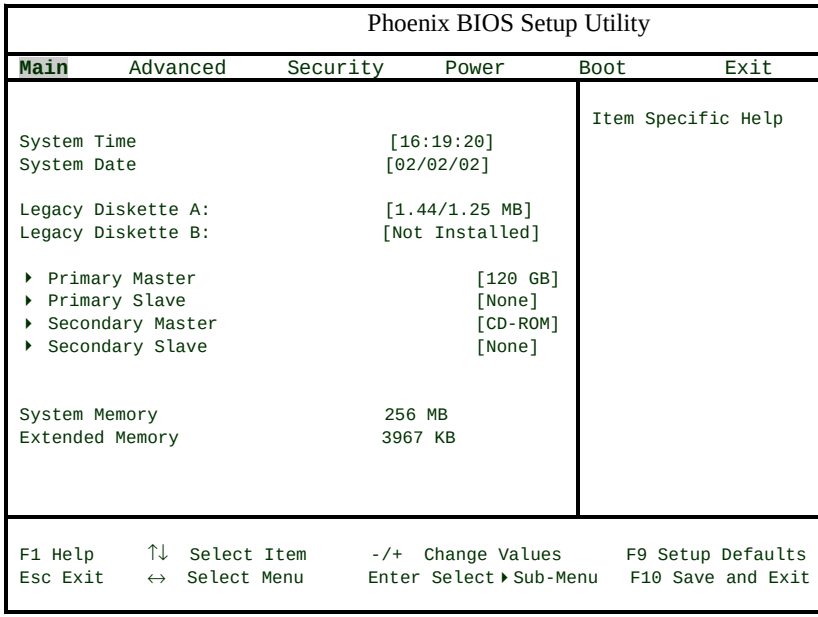
All main Setup options are described in this section. The main BIOS Setup screen is displayed below.

Use the Up/Down arrow keys to move among the different settings in each menu. Use the Left/Right arrow keys to change the options for each setting.

Press the <Esc> key to exit the CMOS Setup Menu. The next section describes in detail how to navigate through the menus.

Items that use submenus are indicated with the ▶ icon. With the item highlighted, press the <Enter> key to access the submenu.

Main BIOS Setup Menu


Phoenix BIOS Setup Utility
Main Advanced Security Power Boot Exit
Item Specific Help
System Time [16:19:20]
System Date [02/02/02]
Legacy Diskette A: [1.44/1.25 MB]
Legacy Diskette B: [Not Installed]
Primary Master [120 GB]
Primary Slave [None]
Secondary Master [CD-ROM]
Secondary Slave [None]
System Memory 256 MB
Extended Memory 3967 KB
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ↔ Select Menu Enter Select ▸ Sub-Menu F10 Save and Exit

Main Setup Features

System Time

To set the system date and time, key in the correct information in the appropriate fields. Then press the <Enter> key to save the data.

System Date

Using the arrow keys, highlight the month, day and year fields and enter the correct data. Press the <Enter> key to save the data.

Legacy Diskette A

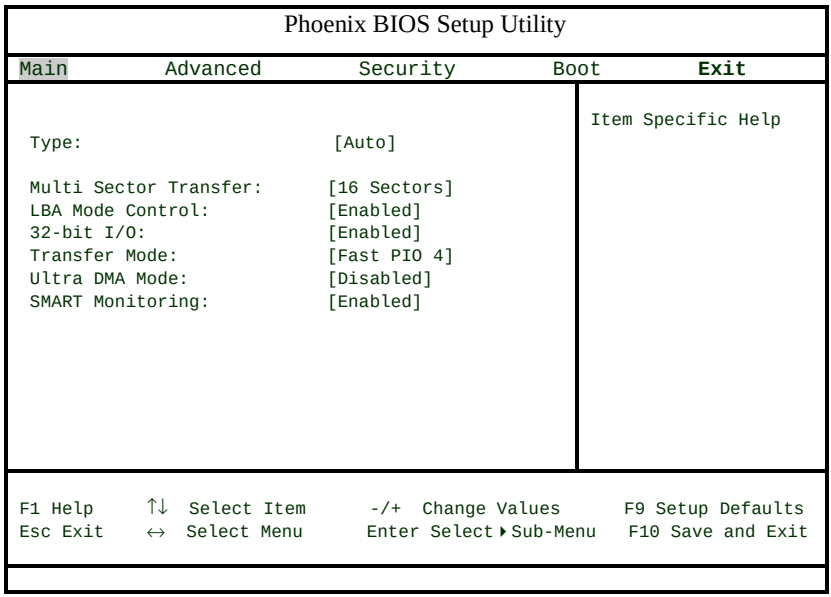
This setting allows the user to set the type of floppy disk drive installed as diskette A. The options are Disabled, 360Kb 5.25 in, 1.2MB 5.25 in, 720Kb 3.5 in, **1.44/1.25MB**, 3.5 in and 2.88MB 3.5 in.

Legacy Diskette B

This setting allows the user to set the type of floppy disk drive installed as diskette B. The options are **Disabled**, 360Kb 5.25 in, 1.2MB 5.25 in, 720Kb 3.5 in, 1.44/1.25MB, 3.5 in and 2.88MB 3.5 in.

▶Primary Master/Primary Slave/Secondary Master/Secondary Slave

These settings allow the user to set the parameters of the IDE Primary Master/Slave and IDE Secondary Master/Slave slots. Hit <Enter> to activate the following sub-menu screen for detailed options of these items. Set the correct configurations accordingly. The items included in the sub-menu are:


Phoenix BIOS Setup Utility
Main Advanced Security Boot Exit
Item Specific Help
Type: [Auto]
Multi Sector Transfer: [16 Sectors]
LBA Mode Control: [Enabled]
32-bit I/O: [Enabled]
Transfer Mode: [Fast PIO 4]
Ultra DMA Mode: [Disabled]
SMART Monitoring: [Enabled]
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ↔ Select Menu Enter Select ▸ Sub-Menu F10 Save and Exit

Type

Selects the type of IDE hard drive. The options are **Auto** (allows BIOS to automatically determine the hard drive's capacity, number of heads, etc.), a number from 1-39 to select a predetermined type of hard drive, CD-ROM and ATAPI Removable.

Multi-Sector Transfers

Select the number of transfer sectors. Options are 2, 4, 6, 8 and **16 Sectors**.

LBA Mode Control

This item determines whether Phoenix BIOS will access the IDE Primary Master Device via LBA mode. The options are **Enabled** and Disabled.

32-bit I/O

Selects 32-bit I/O operation. Options are Enabled and **Disabled**.

Transfer Mode

Selects the transfer mode. Options are Standard, Fast PIO1, Fast PIO2, Fast PIO3, **Fast PIO4**, FPIO3/DMA1 and FPIO4/DMA2.

Ultra DMA Mode

Selects Ultra DMA Mode. Options are **Disabled**, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4 and Mode 5.

System Memory

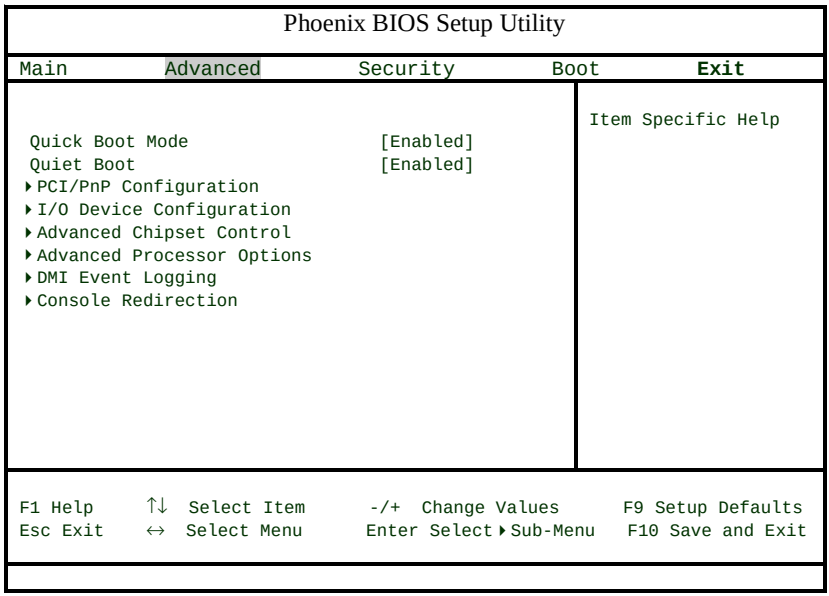
This display informs you how much system memory is recognized as being present in the system.

Extended Memory

This display informs you how much extended memory is recognized as being present in the system.

7-4 Advanced Setup

Choose Advanced from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. The items with a triangle beside them have sub menus that can be accessed by highlighting the item and pressing <Enter>. Options for PIR settings are displayed by highlighting the setting option using the arrow keys and pressing <Enter>. All Advanced BIOS Setup options are described in this section.



Quick Boot Mode

If enabled, this feature will speed up the POST (Power On Self Test) routine after the computer is turned on. The settings are **Enabled** and Disabled. If Disabled, the POST routine will run at normal speed.

Quiet Boot

This setting allows you to **Enable** or Disable the diagnostic screen during boot-up.

▶PCI/PnP Configuration

Access the submenu for this item to make changes to the PCI/PnP configuration, as listed below.

Onboard LAN1 OPROM Configure

Enabling this setting allows you to boot your system from LAN 1. Options are Enabled and **Disabled**.

Onboard LAN2 OPROM Configure

Enabling this setting allows you to boot your system from LAN 2. Options are Enabled and **Disabled**.

Legacy USB Support

This setting allows you to enable support for Legacy USB devices. The settings are Enabled and **Disabled**.

Installed OS

This setting allows you to select the operating system for your computer. The settings are Other, Win95, Win98, WinMe and **Win 2000**.

NT4 Installation Workaround

This setting allows BIOS to provide a workaround for the absence of a floppy drive during NT4 installation. Options are Enabled and **Disabled**.

Reset Configuration Data

Options are Yes and **No**. Choosing Yes will clear the Extended System Configuration Data (ECSD).

▶PCI Slot Configuration

PCI/PCIX Frequency (Slot 4-5)

This setting controls the bus speed of PCI-X slots # 4 and 5. Options are 33 MHz, 66 MHz, 100 MHz, 133 MHz and **Auto**. Note that the onboard SCSI limits the speed of these two slots to 66 MHz on the X5DMS-8GM/ X5DMS-6GM.

PCI/PCIX Frequency (Slot 6)

This setting controls the bus speed of PCI-X slots # 4 and 5. Options are 33 MHz, 66 MHz, 100 MHz, 133 MHz and **Auto**.

▶PCI Device, Slot 1

▶PCI Device, Slot 2

▶PCI Device, Slot 3

▶PCI Device, Slot 4

▶PCI Device, Slot 5

▶PCI Device, Slot 6

Option ROM Scan

This setting (included in the submenu for the above six settings) will initialize the selected device's expansion ROM when enabled. Options are **Enabled** and Disabled.

Enable Master

This setting (included in the submenu for the above six settings) will designate the selected device as the PCI bus master when enabled. Options are Enabled and **Disabled**.

Latency Timer

This setting (included in the submenu for the above six settings) sets the minimum guaranteed time slice allotted to the bus master in units of PCI bus clocks. Options are **Default**, 0020h, 0040h, 0060h, 0080h, 00A0h, 00C0h and 00E0h.

Large Disk Access Mode

This setting determines how large hard drives are to be accessed. The options are **DOS** or Other (for Unix, Novellle NetWare and other operating systems).

Local Bus IDE Adapter

Use this setting to enable the integrated local bus IDE adapter. Options are Disable, Primary, Secondary and **Both**.

▶I/O Device Configuration

Access the submenu to make changes to the following settings.

Power Loss Control

This setting allows you to choose how the system will react when power returns after an unexpected loss of power. Options are Stay Off, Power On and **Last State**.

Watch Dog

This setting is used to enable or disabled the Watch Dog Timer function. It must be used in conjunction with the JP37 jumper (see Chapter 2 for details). Options are Enabled and **Disabled**.

KBC Clock Input

Use this setting to select the keyboard clock rate. Options are 6 MHz, 8 MHz and **12 MHz**.

Serial Port A

This setting allows you to assign control of serial port A. The options are **Enabled** (user defined), Disabled, Auto (BIOS controlled) and OS Controlled.

Base I/O Address

Select the base I/O address for serial port A. The options are **3F8**, 2F8, 3E8 and 2E8.

Interrupt

Select the IRQ (interrupt request) for serial port A. Options are IRQ3 and **IRQ4**.

Serial Port B

This setting allows you to assign control of serial port B. The options are **Enabled** (user defined), Disabled, Auto (BIOS controlled) and OS Controlled.

Mode

Specify the type of device that will be connected to serial port B. Options are **Normal** and IR (for an infrared device).

Base I/O Address

Select the base I/O address for serial port B. The options are 3F8, **2F8**, 3E8 and 2E8.

Interrupt

Select the IRQ (interrupt request) for serial port B. Options are **IRQ3** and IRQ4.

Parallel Port

This setting allows you to assign control of the parallel port. The options are **Enabled** (user defined), Disabled and Auto (BIOS controlled).

Base I/O Address

Select the base I/O address for the parallel port. The options are **378**, 278 and 3BC.

Interrupt

Select the IRQ (interrupt request) for the parallel port. Options are IRQ5 and **IRQ7**.

Mode

Specify the parallel port mode. Options are Output Only, Bi-directional, EPP and **ECP**.

DMA Channel

Specify the DMA channel. Options are DMA1 and **DMA3**.

Floppy Disk Controller

This setting allows you to assign control of the floppy disk controller. The options are **Enabled** (user defined), Disabled and Auto (BIOS controlled).

Base I/O Address

Select the base I/O address for the parallel port. The options are **Primary** and Secondary.

▶Advanced Chipset Control

Access the submenu to make changes to the following settings.

Clock Spectrum Feature

This setting allows you to enable the clock spectrum feature. The options for this setting are **Disabled** and Enabled.

SMART Device Monitoring

This setting lets you enable or disable SMART device monitoring, which may predict IDE drive failure. The options are **Enabled** and Disabled.

ECC Configuration

This setting lets you enable or disable ECC (Error Correction and Checking). The options are **ECC** and Disabled.

ECC Error Type

This setting lets you select which type of interrupt will be activated as a result of an ECC error. The options are **None**, NMI (Non-Maskable Interrupt), SMI (System Management Interrupt) and SCI (System Control Interrupt.

SERR Signal Condition

This setting specifies the conditions required to qualify as an ECC error. Options are **None**, Single Bit, Multiple Bit and Both.

▶Advanced Processor Options

Access the submenu to make changes to the following settings.

CPU Speed

This is a display that indicates the speed of the installed processor.

Fast String Operations

This setting allows you to **Enable** or Disable fast string operations.

Compatible FPU Code

This setting allows you to Enable or **Disable** the compatible FPU code.

Split Lock Operations

This setting allows you to **Enable** or Disable split lock operations.

Hyper-Threading

This setting allows you to **Enable** or Disable hyper-threading. Enabling hyper-threading results in increased CPU performance.

▶DMI Event Logging

Access the submenu to make changes to the following settings.

Event Log Validity

This is a display, not a setting, informing you of the event log validity.

Event Log Capacity

This is a display, not a setting, informing you of the event log capacity.

View DMI Event Log

Highlight this item and press <Enter> to view the contents of the event log.

Event Logging

This setting allows you to **Enable** or Disable event logging.

ECC Event Logging

This setting allows you to **Enable** or Disable ECC event logging.

Mark DMI Events as Read

Highlight this item and press <Enter> to mark the DMI events as read.

Clear All DMI Event Logs

This setting will clear all DMI event logs when set to Yes. Options are Yes and **No**.

▶Console Redirection

Access the submenu to make changes to the following settings.

COM Port Address

Specifies to redirect the console to On-board COMA or On-board COMB. This setting can also be **Disabled**.

BAUD Rate

Select the BAUD rate for console redirection.

Console Type

Choose from the available options to select the console type for console redirection.

Flow Control

Choose from the available options to select the flow control for console redirection.

Console Connection

Select the console connection: either Direct or Via Modem.

Continue CR after POST

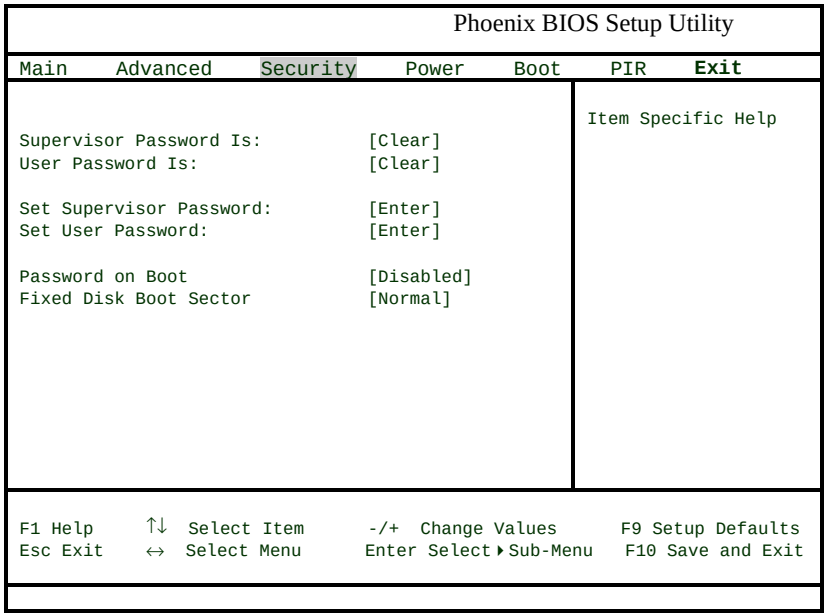
Choose whether to continue with console redirection after the POST routine. Options are On and **Off**.

of Video Pages to Support

Choose the number of video pages to allocate for redirection when video hardware is not available. Options are **1**, 2, 3, 4, 5, 6, 7 and 8.

7-5 Security

Choose Security from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. Security setting options are displayed by highlighting the setting using the arrow keys and pressing <Enter>. All Security BIOS settings are described in this section.


Phoenix BIOS Setup Utility
Main Advanced Security Power Boot PIR Exit
Item Specific Help
Supervisor Password Is: [Clear]
User Password Is: [Clear]
Set Supervisor Password: [Enter]
Set User Password: [Enter]
Password on Boot [Disabled]
Fixed Disk Boot Sector [Normal]
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ↔ Select Menu Enter Select ▸ Sub-Menu F10 Save and Exit

Supervisor Password Is:

This displays whether a supervisor password has been entered for the system. Clear means such a password has not been used and Set means a supervisor password has been entered for the system.

User Password Is:

This displays whether a user password has been entered for the system. Clear means such a password has not been used and Set means a user password has been entered for the system.

Set Supervisor Password

When the item "Set Supervisor Password" is highlighted, hit the <Enter> key. When prompted, type the Supervisor's password in the dialogue box to set or to change supervisor's password, which allows access to BIOS.

Set User Password

When the item "Set User Password" is highlighted, hit the <Enter> key. When prompted, type the user's password in the dialogue box to set or to change the user's password, which allows access to the system at boot-up.

Password on Boot

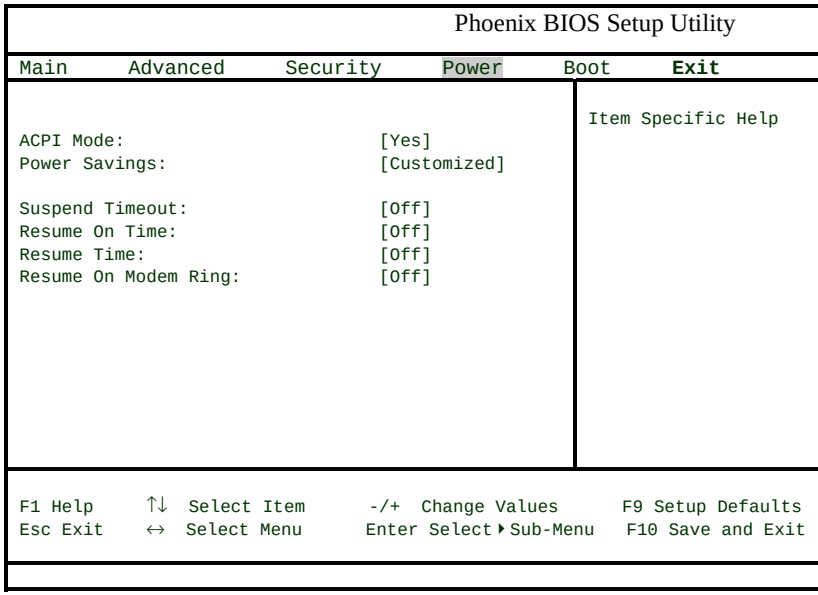
This setting allows you to require a password to be entered when the system boots up. Options are Enabled (password required) and Disabled (password not required).

Fixed Disk Boot Sector

This setting may offer some protection against viruses when set to Write Protect, which protects the boot sector on the hard drive from having a virus written to it. The other option is **Normal**.

7-6 Power

Choose Power from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. Power setting options are displayed by highlighting the setting using the arrow keys and pressing <Enter>. All Power BIOS settings are described in this section.


Phoenix BIOS Setup Utility
Main Advanced Security Power Boot Exit
Item Specific Help
ACPI Mode: [Yes]
Power Savings: [Customized]
Suspend Timeout: [Off]
Resume On Time: [Off]
Resume Time: [Off]
Resume On Modem Ring: [Off]
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ↔ Select Menu Enter Select ▸ Sub-Menu F10 Save and Exit

ACPI Mode

Use the setting to determine if you want to employ ACPI (Advanced Configuration and Power Interface) power management on your system. Options are **Yes** and No.

Power Savings

This setting sets the degree of power saving for the system. The options are Disabled, **Customized**, Maximum Power Savings and Maximum Performance. Customized allows you to alter the other two modes.

Suspend Timeout

Use this setting to specify the period of system inactivity to transpire before entering the suspend state. Options are **Off**, 5 min, 10 min, 15 min, 20 min, 30 min, 40 min and 60 min.

Resume on Time

Select either **Off** or On, which will wake the system up at the time specified in the next setting.

Resume Time

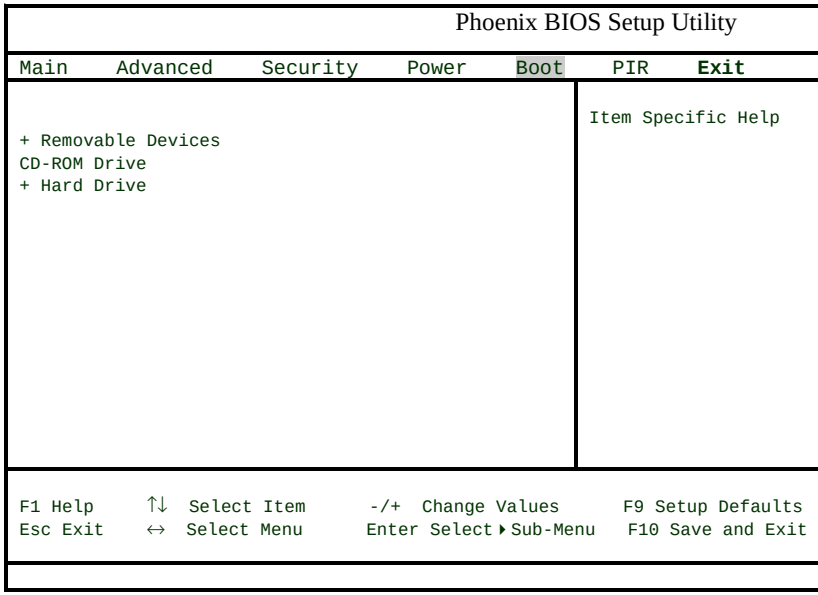
Use this setting to specify the time you want the system to wake up (the above setting must be set to On). Enter the time with the number keys.

Resume On Modem Ring

When set to On, the system can be woken up when an incoming call is detected on the modem. The settings are Select **Off** and On.

7-7 Boot

Choose Boot from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. Highlighting a setting with a + or - willl expand or collapse that entry. See details on how to change the order and specs of boot devices in the Item Specific Help window. All Boot BIOS settings are described in this section.


Phoenix BIOS Setup Utility
Main Advanced Security Power Boot PIR Exit
Item Specific Help
+ Removable Devices
CD-ROM Drive
+ Hard Drive
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ↔ Select Menu Enter Select ▸ Sub-Menu F10 Save and Exit

+Removable Devices

Highlight and presss <Enter> to expand the field. See details on how to change the order and specs of removable devices in the Item Specific Help window.

CD-ROM Drive

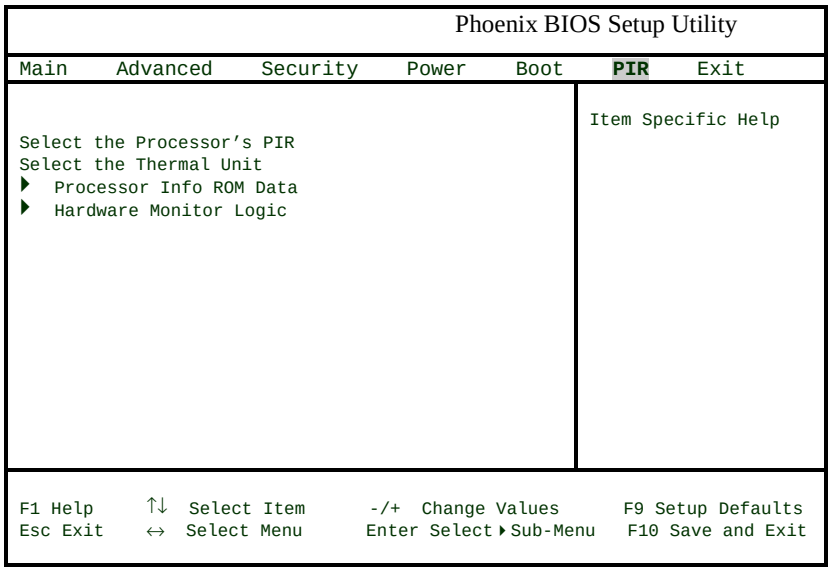
See details on how to change the order and specs of removable devices in the Item Specific Help window.

+Hard Drive

Highlight and presss <Enter> to expand the field. See details on how to change the order and specs of hard drives in the Item Specific Help window.

7-8 PIR

Choose PIR from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. The items with a triangle beside them have sub menus that can be accessed by highlighting the item and pressing <Enter>. PIR stands for "Processor Info ROM", which allows BIOS to read certain information from the processors. Options for PIR settings are displayed by highlighting the setting option using the arrow keys and pressing <Enter>. All PIR BIOS Setup options are described in this section.


Phoenix BIOS Setup Utility
Main Advanced Security Power Boot PIR Exit
Item Specific Help
Select the Processor's PIR
Select the Thermal Unit
Processor Info ROM Data
Hardware Monitor Logic
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ↔ Select Menu Enter Select ▸ Sub-Menu F10 Save and Exit

Select the Processor's PIR

Selects the processor PIR. Options are **A0h/A1h**, A2h/A3h, A4h/A5h, A6h/A7h, A8h/A8h, AAh/ABh, ACh/ADh and AEh/AFh. See the Item Specific Help field for details.

Select the Thermal Unit

Selects the thermal unit. Options are **30h/31h**, 32h/33h, 34h/35h, 52h/53h, 54h/55h, 56h/57h, 98h/99h, 9Ah/9Bh and 9Ch/9Dh. See the Item Specific Help field for details.

▶Processor Info ROM Data

Highlight this and hit <Enter> to see PIR data on the following items:

Header Info

Processor Data

Processor Core Data

L3 Cache Data

Package Data

Part Number Data

Thermal Reference Data

Feature Data

Other Data

OEM Data

▶Hardware Monitor Logic

Highlight this and hit <Enter> to see monitor data for the following items:

CPU1 Temperature

CPU2 Temperature

System Temperature

CPU Fan1 Chassis Fan

CPU Fan2 Chassis Fan

Processor Vcore (V)

3.3V Standby (V)

3.3V Vcc (V)

5V Vcc (V)

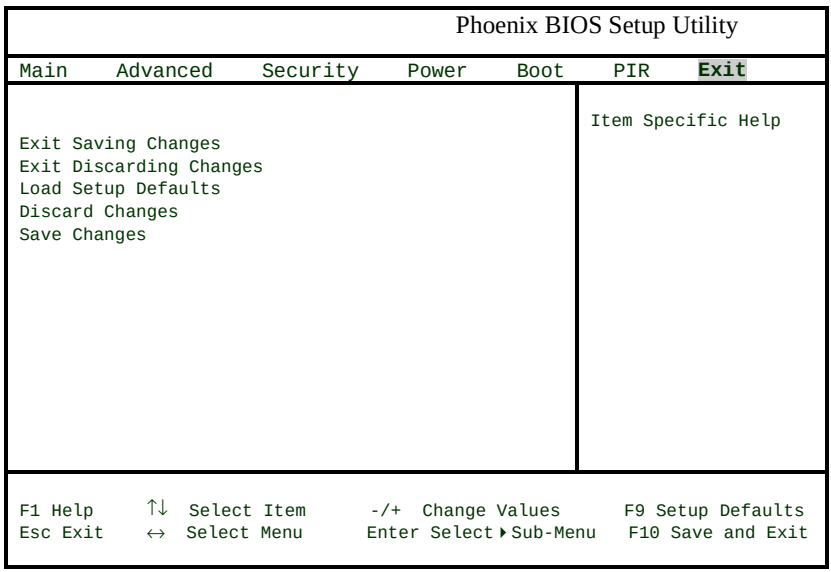
12V Vcc (V)

1.8V Vcc (V)

-12V Vcc (V)

7-9 Exit

Choose Exit from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. All Exit BIOS settings are described in this section.


Phoenix BIOS Setup Utility
Main Advanced Security Power Boot PIR Exit
Item Specific Help
Exit Saving Changes
Exit Discarding Changes
Load Setup Defaults
Discard Changes
Save Changes
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ↔ Select Menu Enter Select ▸ Sub-Menu F10 Save and Exit

Exit Saving Changes

Highlight this item and hit <Enter> to save any changes you made and to exit the BIOS Setup utility.

Exit Discarding Changes

Highlight this item and hit <Enter> to exit the BIOS Setup utility without saving any changes you may have made.

Load Setup Defaults

Highlight this item and hit <Enter> to load the default settings for all items in the BIOS Setup. These are the safest settings to use.

Discard Changes

Highlight this item and hit <Enter> to discard (cancel) any changes you made. You will remain in the Setup utility.

Save Changes

Highlight this item and hit <Enter> to save any changes you made. You will remain in the Setup utility.

Notes

Appendix A

BIOS POST Messages

During the Power-On Self-Test (POST), the BIOS will check for problems. If a problem is found, the BIOS will activate an alarm or display a message. The following is a list of such BIOS messages.

Failure Fixed Disk
Fixed disk is not working or not configured properly. Check to see if fixed disk is attached properly. Run Setup. Find out if the fixed-disk type is correctly identified.

Stuck key
Stuck key on keyboard.

Keyboard error
Keyboard not working.

Keyboard Controller Failed
Keyboard controller failed test. May require replacing keyboard controller.

Keyboard locked - Unlock key switch
Unlock the system to proceed.

Monitor type does not match CMOS - Run SETUP
Monitor type not correctly identified in Setup

Shadow Ram Failed at offset: nnnn
Shadow RAM failed at offset **nnnn** of the 64k block at which the error was detected.

System RAM Failed at offset: nnnn
System RAM failed at offset **nnnn** of in the 64k block at which the error was detected.

Extended RAM Failed at offset: nnnn Extended memory not working or not configured properly at offset **nnnn.**

System battery is dead - Replace and run SETUP
The CMOS clock battery indicator shows the battery is dead. Replace the battery and run Setup to reconfigure the system.

System CMOS checksum bad - Default configuration used
System CMOS has been corrupted or modified incorrectly, perhaps by an application program that changes data stored in CMOS. The BIOS installed Default Setup Values. If you do not want these values, enter Setup and enter your own values. If the error persists, check the system battery or contact your dealer.

System timer error
The timer test failed. Requires repair of system board.

Real time clock error
Real-Time Clock fails BIOS hardware test. May require board repair.

Check date and time settings
BIOS found date or time out of range and reset the Real-Time Clock. May require setting legal date (1991-2099).

Previous boot incomplete - Default configuration used
Previous POST did not complete successfully. POST loads default values and offers to run Setup. If the failure was caused by incorrect values and they are not corrected, the next boot will likely fail. On systems with control of **wait states**, improper Setup settings can also terminate POST and cause this error on the next boot. Run Setup and verify that the waitstate configuration is correct. This error is cleared the next time the system is booted.

Memory Size found by POST differed from CMOS
Memory size found by POST differed from CMOS.

Diskette drive A error
Diskette drive B error
Drive A: or B: is present but fails the BIOS POST diskette tests. Check to see that the drive is defined with the proper diskette type in Setup and that the diskette drive is attached correctly.

Incorrect Drive A type - run SETUP
Type of floppy drive A: not correctly identified in Setup.

Incorrect Drive B type - run SETUP
Type of floppy drive B: not correctly identified in Setup.

System cache error - Cache disabled
RAM cache failed and BIOS disabled the cache. On older boards, check the cache jumpers. You may have to replace the cache. See your dealer. A disabled cache slows system performance considerably.

CPU ID:
CPU socket number for Multi-Processor error.

EISA CMOS not writeable
ServerBIOS2 test error: Cannot write to EISA CMOS.

DMA Test Failed
ServerBIOS2 test error: Cannot write to extended **DMA** (Direct Memory Access) registers.

Software NMI Failed
ServerBIOS2 test error: Cannot generate software NMI (Non-Maskable Interrupt).

Fail-Safe Timer NMI Failed
ServerBIOS2 test error: Fail-Safe Timer takes too long.

device Address Conflict
Address conflict for specified **device.**

Allocation Error for: device
Run ISA or EISA Configuration Utility to resolve resource conflict for the specified **device**.

CD ROM Drive
CD ROM Drive identified.

Entering SETUP ...
Starting Setup program

Failing Bits: nnnn
The hex number **nnnn** is a map of the bits at the RAM address which failed the memory test. Each 1 (one) in the map indicates a failed bit. See errors 230, 231, or 232 above for offset address of the failure in System, Extended, or Shadow memory.

Fixed Disk n
Fixed disk **n** (0-3) identified.

Invalid System Configuration Data
Problem with NVRAM (CMOS) data.

I/O device IRQ conflict
I/O device IRQ conflict error.

PS/2 Mouse Boot Summary Screen:
PS/2 Mouse installed.

nnnn kB Extended RAM Passed
Where **nnnn** is the amount of RAM in kilobytes successfully tested.

nnnn Cache SRAM Passed
Where **nnnn** is the amount of system cache in kilobytes successfully tested.

nnnn kB Shadow RAM Passed
Where **nnnn** is the amount of shadow RAM in kilobytes successfully tested.

nnnn kB System RAM Passed
Where **nnnn** is the amount of system RAM in kilobytes successfully tested.

One or more I2O Block Storage Devices were excluded from the Setup Boot Menu
There was not enough room in the IPL table to display all installed I2O block-storage devices.

Operating system not found
Operating system cannot be located on either drive A: or drive C:. Enter Setup and see if fixed disk and drive A: are properly identified.

Parity Check 1 nnnn
Parity error found in the system bus. BIOS attempts to locate the address and display it on the screen. If it cannot locate the address, it displays **????.** Parity is a method for checking errors in binary data. A parity error indicates that some data has been corrupted.

Parity Check 2 nnnn
Parity error found in the I/O bus. BIOS attempts to locate the address and display it on the screen. If it cannot locate the address, it displays **????.**

Press <F1> to resume, <F2> to Setup, <F3> for previous
Displayed after any recoverable error message. Press <F1> to start the boot process or <F2> to enter Setup and change the settings. Press <F3> to display the previous screen (usually an initialization error of an **Option ROM**, i.e., an add-on card). Write down and follow the information shown on the screen.

Press <F2> to enter Setup
Optional message displayed during POST. Can be turned off in Setup.

PS/2 Mouse:
PS/2 mouse identified.

Run the I2O Configuration Utility
One or more unclaimed block storage devices have the Configuration Request bit set in the LCT. Run an I2O Configuration Utility (e.g. the SAC utility).

System BIOS shadowed
System BIOS copied to shadow RAM.

UMB upper limit segment address: *nnnn*
Displays the address ***nnnn*** of the upper limit of **Upper Memory Blocks**, indicating released segments of the BIOS which can be reclaimed by a virtual memory manager.

Video BIOS shadowed
Video BIOS successfully copied to shadow RAM.

Notes

Appendix B

BIOS POST Codes

This section lists the POST (Power On Self Test) codes for the PhoenixBIOS. POST codes are divided into two categories: recoverable and terminal.

Recoverable POST Errors

When a recoverable type of error occurs during POST, the BIOS will display an POST code that describes the problem. BIOS may also issue one of the following beep codes:

1 long and two short beeps - video configuration error
1 continuous long beep - no memory detected

Terminal POST Errors

If a terminal type of error occurs, BIOS will shut down the system. Before doing so, BIOS will write the error to port 80h, attempt to initialize video and write the error in the top left corner of the screen.
The following is a list of codes that may be written to port 80h.

POST Code	Description
02h	Verify Real Mode
03h	Disable Non-Maskable Interrupt (NMI)
04h	Get CPU type
06h	Initialize system hardware
07h	Disable shadow and execute code from the ROM.
08h	Initialize chipset with initial POST values
09h	Set IN POST flag
0Ah	Initialize CPU registers
0Bh	Enable CPU cache
0Ch	Initialize caches to initial POST values
0Eh	Initialize I/O component
0Fh	Initialize the local bus IDE
10h	Initialize Power Management
11h	Load alternate registers with initial POST values
12h	Restore CPU control word during warm boot
13h	Initialize PCI Bus Mastering devices
14h	Initialize keyboard controller
16h	1-2-2-3 BIOS ROM checksum
17h	Initialize cache before memory Auto size

POST Code	Description
18h	8254 timer initialization
1Ah	8237 DMA controller initialization
1Ch	Reset Programmable Interrupt Controller
20h	1-3-1-1 Test DRAM refresh
22h	1-3-1-3 Test 8742 Keyboard Controller
24h	Set ES segment register to 4 GB
28h	Auto size DRAM
29h	Initialize POST Memory Manager
2Ah	Clear 512 kB base RAM
2Ch	1-3-4-1 RAM failure on address line ***xxxx****
2Eh	1-3-4-3 RAM failure on data bits ***xxxx**** of low byte of memory bus
2Fh	Enable cache before system BIOS shadow
32h	Test CPU bus-clock frequency
33h	Initialize Phoenix Dispatch Manager
36h	Warm start shut down
38h	Shadow system BIOS ROM
3Ah	Auto size cache
3Ch	Advanced configuration of chipset registers
3Dh	Load alternate registers with CMOS values
41h	Initialize extended memory for RomPilot
42h	Initialize interrupt vectors
45h	POST device initialization
46h	2-1-2-3 Check ROM copyright notice
47h	Initialize I20 support
48h	Check video configuration against CMOS
49h	Initialize PCI bus and devices
4Ah	Initialize all video adapters in system
4Bh	QuietBoot start (optional)
4Ch	Shadow video BIOS ROM
4Eh	Display BIOS copyright notice
4Fh	Initialize MultiBoot
50h	Display CPU type and speed
51h	Initialize EISA board
52h	Test keyboard
54h	Set key click if enabled
55h	Enable USB devices
58h	2-2-3-1 Test for unexpected interrupts
59h	Initialize POST display service
5Ah	Display prompt “Press F2 to enter SETUP”
5Bh	Disable CPU cache

POST Code	Description
5Ch	Test RAM between 512 and 640 kB
60h	Test extended memory
62h	Test extended memory address lines
64h	Jump to UserPatch1
66h	Configure advanced cache registers
67h	Initialize Multi Processor APIC
68h	Enable external and CPU caches
69h	Setup System Management Mode (SMM) area
6Ah	Display external L2 cache size
6Bh	Load custom defaults (optional)
6Ch	Display shadow-area message
6Eh	Display possible high address for UMB recovery
70h	Display error messages
72h	Check for configuration errors
76h	Check for keyboard errors
7Ch	Set up hardware interrupt vectors
7Dh	Initialize Intelligent System Monitoring
7Eh	Initialize coprocessor if present
80h	Disable onboard Super I/O ports and IRQs
81h	Late POST device initialization
82h	Detect and install external RS232 ports
83h	Configure non-MCD IDE controllers
84h	Detect and install external parallel ports
85h	Initialize PC-compatible PnP ISA devices
86h	Re-initialize onboard I/O ports.
87h	Configure Motherboard Configurable Devices (optional)
88h	Initialize BIOS Data Area
89h	Enable Non-Maskable Interrupts (NMIs)
8Ah	Initialize Extended BIOS Data Area
8Bh	Test and initialize PS/2 mouse
8Ch	Initialize floppy controller
8Fh	Determine number of ATA drives (optional)
90h	Initialize hard-disk controllers
91h	Initialize local-bus hard-disk controllers
92h	Jump to UserPatch2
93h	Build MPTABLE for multi-processor boards
95h	Install CD ROM for boot
96h	Clear huge ES segment register
97h	Fix up Multi Processor table
98h	1-2 Search for option ROMs. One long, two short beeps on checksum failure

POST Code	Description
99h	Check for SMART Drive (optional)
9Ah	Shadow option ROMs
9Ch	Set up Power Management
9Dh	Initialize security engine (optional)
9Eh	Enable hardware interrupts
9Fh	Determine number of ATA and SCSI drives
A0h	Set time of day
A2h	Check key lock
A4h	Initialize typematic rate
A8h	Erase F2 prompt
AAh	Scan for F2 key stroke
ACh	Enter SETUP
AEh	Clear Boot flag
B0h	Check for errors
B1h	Inform RomPilot about the end of POST.
B2h	POST done - prepare to boot operating system
B4h	1 One short beep before boot
B5h	Terminate QuietBoot (optional)
B6h	Check password (optional)
B7h	Initialize ACPI BIOS
B9h	Prepare Boot
BAh	Initialize SMBIOS
BBh	Initialize PnP Option ROMs
BCh	Clear parity checkers
BDh	Display MultiBoot menu
BEh	Clear screen (optional)
BFh	Check virus and backup reminders
C0h	Try to boot with INT 19
C1h	Initialize POST Error Manager (PEM)
C2h	Initialize error logging
C3h	Initialize error display function
C4h	Initialize system error handler
C5h	PnPnd dual CMOS (optional)
C6h	Initialize note dock (optional)
C7h	Initialize note dock late
C8h	Force check (optional)
C9h	Extended checksum (optional)
CAh	Redirect Int 15h to enable remote keyboard
CBh	Redirect Int 13h to Memory Technologies Devices such as ROM, RAM, PCMCIA, and serial disk
CCh	Redirect Int 10h to enable remote serial video

POST Code	Description
CDh	Re-map I/O and memory for PCMCIA
CEh	Initialize digitizer and display message
D2h	Unknown interrupt

The following are for boot block in Flash ROM

POST Code	Description
E0h	Initialize the chipset
E1h	Initialize the bridge
E2h	Initialize the CPU
E3h	Initialize system timer
E4h	Initialize system I/O
E5h	Check force recovery boot
E6h	Checksum BIOS ROM
E7h	Go to BIOS
E8h	Set Huge Segment
E9h	Initialize Multi Processor
EAh	Initialize OEM special code
EBh	Initialize PIC and DMA
ECh	Initialize Memory type
EDh	Initialize Memory size
EEh	Shadow Boot Block
EFh	System memory test
F0h	Initialize interrupt vectors
F1h	Initialize Run Time Clock
F2h	Initialize video
F3h	Initialize System Management Manager
F4h	Output one beep
F5h	Clear Huge Segment
F6h	Boot to Mini DOS
F7h	Boot to Full DOS

* If the BIOS detects error 2C, 2E, or 30 (base 512K RAM error), it displays an additional word-bitmap (***xxxx***) indicating the address line or bits that failed. For example, "2C 0002" means address line 1 (bit one set) has failed. "2E 1020" means data bits 12 and 5 (bits 12 and 5 set) have failed in the lower 16 bits. The BIOS also sends the bitmap to the port-80 LED display. It first displays the checkpoint code, followed by a delay, the high-order byte, another delay, and then the loworder byte of the error. It repeats this sequence continuously.

Notes

Appendix C

Supero Doctor III

C-1 Overview

The Supero Doctor III program is a Web-based management tool that supports remote management capability and includes both Remote and Local Management tools. The local management is called the SD III Client. The Supero Doctor III program included on the CD-ROM that came with your motherboard allows you to monitor the environment and operations of your system. Supero Doctor III displays crucial system information such as CPU temperature, system voltages and fan status.

Key Features

For Windows XP, NT4, 2000 and 2003 Operating Systems

Super Doctor III supports the following features:

- Web-based remote management
- Graphical Mode Console Redirection
- System Information (WMI)
- Performance Monitoring
- Remote Control
  Graceful power shutdown and reboot
  Hard power shutdown and reset without notice
- System Management
  Allows you to easily manage your entire network
- Reports
  System Information
  Health Log
  Administration
  System Management

Linux Support

The SD III Client and Supero Doctor II for Linux support the following features:*

- Applications for local management
- Pager and E-mail alerts
- SNMP support
- Health Monitoring
  CPU and system temperatures
  System voltages
  CPU and chassis fans
  Chassis intrusion
  Redundant power failure (hardware dependant)

Note: For Linux operating systems, please refer to the Supero Doctor II information posted on our website at ftp://ftp.supermicro.com/utility/Supero_Doctor_II/Linux/ .

The figures below display two of the key features of SDIII.

Figure C-1. Supero Doctor III Health Information Screen

Figure C-2. Supero Doctor III Remote Power/Reset Control Screen

Note: SD III software can be downloaded from our website at ftp://ftp.supermicro.com/utility/Supero_Doctor_III/. You can also download the SDIII User's Guide at http://www.supermicro.com/PRODUCT/Manuals/SDIII/UserGuide.pdf. For Linux, we recommend the use of Supero Doctor II. Please refer to our Supero Doctor II information posted at ftp://ftp.supermicro.com/utility/Supero_Doctor_II/Linux/.

Notes

Appendix D

System Specifications

Processors

Single or dual 603/604-pin Intel® Xeon™ processors to 3.20 GHz at a front side (system) bus speed of 533/400 MHz

Note: Please refer to the support section of our web site for a complete listing of supported processors. (http://www.supermicro.com/TechSupport.htm)

Chipset

Intel E7501 chipset

Memory Capacity

Six 184-pin DDR DIMM sockets supporting up to 12 GB of registered ECC DDR266/200 (PC2100/1600) SDRAM

Note: Interleaved memory - requires memory to be installed two at a time. See the memory section in Chapter 5 for details.

Operating Systems Supported

Windows NT, Windows 2000, Solaris, Netware, SCO UNIX and Linux

SCSI Controller

7043M-8: Adaptec AIC-7902 for single channel, Ultra320 onboard SCSI
7043M-6: Adaptec AIC-7899W for single channel, Ultra160 onboard SCSI

Peripheral Drives/Bays

One (1) 3.5" floppy drive
Three (3) 5 1/4" drive bays
Seven (7) 3.5" x 1" drive bays (for SCSI drives)

Expansion Slots

Chassis: Seven (7) I/O chassis slots
Motherboard: Total of three (3) PCI-X and three (3) PCI slots

Motherboard

7043M-8: X5DMS-8GM (Extended ATX form factor)
7043M-6: X5DMS-6GM (Extended ATX form factor)
Dimensions (both boards): 12" x 13.05" (305 x 330 mm)

Chassis

Model: SC742S-450
Form Factor: 4U rackmount or tower
Dimensions: 17.1" x 7" x 24.2" (434 x 178 x 615 mm)

Weight

Net (Bare Bone): ~46 lbs.
Gross (Bare Bone): ~56 lbs.

System Cooling

Two (2) 9-cm chassis cooling fans (hot-swappable)
One (1) 12-cm exhaust fan (non hot-swappable)

System Input Requirements

AC Input Voltage: 100-240 VAC auto-range
Rated Input Current: 10A (115V) to 5A (230V)
Rated Input Frequency: 50 to 60 Hz

Power Supply

Rated Output Power: 450W (Model# SP450-RP, Part# PWS-0045)
Rated Output Voltages: +3.3V (30A), +5V (26A), +12V (30A), -5 (0.5A), -12V (1A), +5Vsb (2A)

BTU Rating

2400 BTUs/hr (for rated output power of 450W)

Operating Environment

Operating Temperature: 0 to +35 degrees C
Non-operating Temperature: -35 to +60 degrees C
Operating Relative Humidity: 5-90%, (non-condensing)
Non-operating Relative Humidity: 5-95%, (non-condensing)

Regulatory Compliance

Electromagnetic Emissions: FCC Class B, EN 55022 Class B, EN 61000-3-2 & -3-3, CISPR 22 Class B

Electromagnetic Immunity: EN 55024/CISPR 24, (EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11)

Safety: EN 60950/IEC 60950-Compliant
UL Listed (USA), CUL Listed (Canada), TUV Certified (Germany), CE Marking (Europe)

Notes